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HEKEKYAN BEY

ON

EGYPTIAN CHRONOLOGY.

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From the Author

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A TREATISE

ON THE

CHRONOLOGY OF SIRIADIC MONUMENTS,

DEMONSTRATING THAT

THE EGYPTIAN DYNASTIES OF MANETHO ARE
RECORDS OF ASTROGEOLOGICAL NILE OBSERVATIONS
WHICH
HAVE BEEN CONTINUED TO THE PRESENT TIME.

BY

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[FOR PRIVATE CIRCULATION.]

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PREFACE.

Researches into the physical constitution of the Nile valley and investigations into the gnomic properties of the existing monuments of pharaonic dates have revealed the existence of a great science which concerned the application of Geology and Astronomy to Agriculture, once cultivated by the remotest generations of our forefathers.

Existing traditions would point to the far East, and to those countries in Asia where mighty rivers inundate extensive valleys deprived of rain sufficient for agricultural purposes, as the cradles of that science, and from which, being brought to the West, it was introduced to Egypt, and from Egypt to Greece and to all parts of the great basin of the Mediterranean.

This astrogeological science, by the application of its principles to the regulation of the Nile's deposits, appears to have been known in Egypt as the science of Khemy, because the river's deposits, from one extremity of its valley down to the other, are a dark-coloured argillaceous soil—so dark as to be distinguished from soils of other colours by the term Khem, signifying "black" in the Egyptian language.

The motions affecting the solid crust of the earth were converted into a mighty engine obedient to the will of man, and were employed to improve the habitable parts of the earth through the agencies of mud-depositing rivers and other active phenomena of nature. The directions and the velocities of the geological motions were measured, recorded, and dated by a system of diurnal observations in monuments erected *in* rivers and seas. The metric unit was the mean velocity of observed geological motions; and the linear standard was the *cubit*, which measured the mean velocity of observed motions in three hundred and sixty tropical years. This standard being determined and adopted, was ordained to remain a perpetual and a universal standard of comparison in the measurements of space and geological time.

The Nile valley continues to be artificially manipulated by regulation of the velocities of the river's deposits over the corn-growing lands, in accordance with the observed directions and velocities of the motions of the crust of the earth, according to fixed rules: and its inhabitants have, by tradition and custom, retained the art of applying the science. The observations are made by the priesthood: and the inhabitants obey them in not opening the canals until permission be given by the seers to open them.

In those countries where vast districts were wrested from the domain of Neptune and delivered from the evil influences of Typhon by the application of the science of Khemy, provinces, rendered salubrious, cultivable, and populous and powerful, have been maintained in the enjoyment of those blessings so long as the work done by mud-depositing rivers and torrents continued to be regulated by geological observations. It is conjectured that in the time of the Etruscans the Italian marshes remained flourishing provinces during many centuries in succession. Traditional rules and customs have perished with the inhabitants. And in succeeding times, when any one of those maritime marshes was reclaimed, its restoration to health and productiveness has been comparatively shortlived—apparently from the science of Khemy having been entirely forgotten.

The astrogeological science gave birth to a monumental system, by means of which the fruits of the accumulated observations and experiences of the human race have been preserved, outliving writings, inscriptions, traditions, and nationalities. The principal monuments had imparted to them the essential property of being autochronous landmarks of a geochronological nature. Many of them recorded, hydromathematically, the knowledge in astronomy, in geography, and in the dimensions and figure of the earth obtained in their respective epochs. They were Siriadic monuments, because their magistral lines were projected to the scale of the revolutions of the cycles of the star Surios in terms of the standard astrogeological cubit. It is the star Sirius; the same being known by the appellations of Seth, Sothis, Ptha or P-theos, and other homophonous words.

The Siriadic monuments have the characteristic of being the most authentic and intelligible documents of a historical nature for the transmission of information to the remotest generations of mankind devisable by the ingenuity of man. Many of the most durable monuments of a Siriadic nature have survived the ravages of time and the hand of the spoiler. They indicate that the lists hitherto known as the Egyptian dynasties of Manetho are a copy of a connected series of Nile observations in the great Memphis Niloscope, extending from the epoch when Egypt submitted to the Macedonian rule back to the reign of Menes, a king who commenced to reign in the close of the fiftieth year of the astronomical date from which the present series of Nile observations are computed, in the same Niloscope now called the Mekïas of Roda. The physical constitution of the Nile valley and the Siriadic monuments prove the accuracy of those lists and the justice of their claim to historical authenticity.

The object of this work is to exhibit the Manethonian lists divested of that which has been accidentally or perhaps designedly made to enter into them, and to restore them to their original state. Having employed the land and sea canons of the river and the dates of the monuments to restore the Manethonian lists to their original form, we have found, by the light they now reflect on the Hebrew and Babylonian chronologies, that the latter synchronize between themselves, and perfectly accord with the Egyptian accounts, and have led to the discovery that many of the great political events marking the transactions of the Egyptians, Hebrews, Babylonians, and other nations of antiquity were made to occupy certain symmetrical graduations on the column of years divided into Sothis periods. I shall here give one or two instances in connexion with Hebrew chronology.

1. Judah was destroyed by order of Nebuchadnezzar in the middle point of the Sothis period of 1460 Nile years which opened in B.C. 1322, and constituted the celebrated astronomical epoch of Memphis. The *vulgar era* of the Hebrews points to the date of that event, and to that scale, by *its* being made to graduate three chiliads of Nile years anterior to the middle point of the Menophrean cycle of Sothis.

2. The delivery of the Israelites from their bondage under the Midianites by Gideon was determined to be in the first night of the summer of the year when the image of the star Sothis was reflected in the bosom of the Nile in the Memphis Niloscope for the first time after a period of about 1460 Nile years just at sunrise in B.C. 1322. Knowing the date of the first year of the administration of Gideon, and recollecting that in Hebrew chronology the years from the birth of Abraham are always lunar (with the sole exception of the ages of Jacob), the Apostle Paul's chronological ordinate becomes divided into an ante-Menophrean and a post-Menophrean section, and assigns the lapse of time from the Isodus to the Judges, and from the close of the administration of Eli to the reign of Saul. These things

have been explained in the treatise on the chronology of Siriadic monuments introductory to the Manethonian lists. And as many terms have been employed in this treatise which the novelty of the subject has suggested, and which an uncultivated mind is often tempted to indulge in when a new field of research is opened, an imaginary dialogue between an Egyptian priest and a stranger from Greece in Heliopolis has been prefixed, with the object of defining some of the new-coined words employed, and at the same time of preparing the mind of the reader to understand the nature of the subject and my method of handling it.

Some important sections of the soil in Memphis, Saïse, and Rosetta have been appended to the Nile lists. They are followed by a description of the Memphis Niloscope; to which are appended a table of the Agricultural Canon of the river, and a table of the historical scale of Niloscopic records.

The books to be consulted are: (1) the Old and New Testaments; (2) the researches of Herodotus; (3) the collection of ancient fragments by Cory; (4) the Reports of the International Commission for the determination of the relative levels of the two seas and the Nile, in 1846–47; (5) the Reports of the Société d'Etude de l'Isthme de Suez; (6) the accounts of the aneroïd altitudes in Palestine, by Poole and Lieutenant Lynch; (7) the memoirs written by MM. Girard, Rozière, and J. Marcel, published in the great work on Egypt by the French Government; (8) Greaves's 'Pyramidographia';

(9) Colonel Vyse's researches; (10) Hale's 'Chronology' (the first volume only); (11) Botta's, Place's, and Jules Oppert's papers on the Babylonian monuments; (12) Layard's researches; (13) L. Horner's memoir appended to the English version of Lepsius's 'Letters from Egypt'; and (14) Horner's memoirs on the alluvial accumulations in Memphis and Heliopolis. The maps of Egypt to be used are those of Jacotin and Berghaus, and Emory's Map of the United States and Mexican Boundary.

I have refrained from burdening these pages with notes of reference and citations from authors, as I have addressed them principally to those who should already be conversant with the general tenor of the books and the papers of reference above enumerated.

My object in publishing this Memoir has been to do justice to our forefathers—to rescue them from the imputation of having disseminated falsehood, of which modern investigators, from want of *practical* information, have too hastily accused them; to suggest to engineers fresh data on hydraulics, drawn from the historically recorded data in some of the oldest monuments; to dissipate the erroneous and the injurious notion entertained by many, that the human races, resembling an individual man, have their periods of infancy, maturity, and decadence; to instil into the mind the great historical truth, the alpha and the omega of the teachings the monuments were intended to convey, that the destinies of nations, as of individuals, are in their own hands;

and that the absurd fables and impossible combinations, such as magic, necromancy, astrology, childish miracles, and millenniums, having their origin in a science applied to the uses of common life, are merely the confused images and echoes of realities which have been bequeathed to us by our ancestors, during the last period of darkness which has afflicted the world.

H. B.

September 1863.

INTRODUCTION

TO THE

TREATISE ON SIRIADIC MONUMENTS.

A DIALOGUE IN HELIOPOLIS BETWEEN AN EGYPTIAN PRIEST AND A GREEK WHO, HAVING STUDIED IN THE SCHOOLS OF ATHENS, CAME TO EGYPT TO COMPLETE HIS STUDIES IN THE UNIVERSITY OF HELIOPOLIS.

The Egyptian.—I am glad to hear that you have disposed of your cargo so profitably. There is always a demand in Egypt for olive-oil. We express large quantities of oil ourselves; but it is from the seeds of the Kharwah, the Sesamum, and those of other oleaginous plants, as well for the table as for the extensive illuminations our nation are so fond of. But our climate does *not as yet* produce either the hazel, the currant, or any of the other fruits with which you supply us from your more northern climes; and the olives we grow are few, and are chiefly consumed in our fleets and land garrisons. What goods have you taken in exchange for your cargo?

The Greek.— Corn, and ready-made garments in wool, leather, and fine linen. I have also purchased images in bronze, and jewellery in mixed metals, in enamel, and in hard stones, made after our patterns in Memphis, Thebes, and Edfou. My ship is now in the mouth of this canal [pointing to the canal of the Pharaohs, which, commencing from the Nile at Babylon, ran a few hundred paces to the west of the western extremity of the avenue of sphinxes before the temple of Heliopolis where they were walking, and passing round the skirts of the Arabian hills reached the Red Sea at the port of Clysma], in the Port of the Reed; and I am anxious to send her out to sea without delay, being informed that neither the bars of the river nor the Racotis canal will be navigable in a fortnight hence.

E.—You need not fear detention. The western bar of the Nile may be passed by vessels drawing four cubits of water the whole year round.

G.—The 'Artemisia' draws four cubits and a half with her full cargo.

E.—Should you not be able to clear her from Memphis until the ebb of the river, you can always sail her on the Racotis canal direct to the Pharos.

G.—I thought the Racotis canal was not navigable during the season of drought, even for smaller vessels than mine.

E.—The canal was neglected during several years, until last year, when it was restored to the navigation of heavy ships by the removal of the mud which had silted up its bed and had been allowed to accumulate to the extent of three thousand paces from its river-entrance. It is now navigable for vessels drawing five cubits of water even when the river falls to its lowest ebb. It will always take you a day's sail to reach Racotis, whether you leave the Nile at the canal or at its bar out to sea.

G.—A passage in Homer——

E.—Do not mention it. It has caused us more trouble with travellers wanting information on the sense of that passage than anything else. The river itself is meant by 'Ægyptus,' and not the extent of land which its waters were made to reach and to fertilize. The Pharos was always an island distant a day's sail to the Rosetta branch, or to the river by the canal of fresh water which enabled the Pharos to be built on the island to which it has given its name. Do you intend to return to Greece in your own ship?

G.—I shall remain here and attend to the scientific discourses of your professors. That was the object which brought me to this country, and I hope a portion of the profits accruing from the sale of my cargo will defray my expenses here for a few years.

E.—You will find Heliopolis a quiet town. It is considered to be one of the healthiest places in Egypt. Half an hour's walk in one way or the other will convey you from the sublime mountain scenery of the Arabian deserts into the midst of flocks and children in green fields, with running waters, and trees. But I must tell you that just now lodgings are very dear on account of the great concourse of strangers who come from all parts of the world to study, or to compete for the state prizes awarded to the exhibitors of the best cattle. You only require a single chamber to sleep in. You can pass the days in halls, in courts dedicated to the separate sciences, the public libraries, museums, and groves. You may take your meals in the baths and gardens to the south of the temples and schools. I would recommend you to shave your head. Of course you will conform in all things to our manners and customs if you wish to attract no attention and be comfortable.

G.—I shall certainly do as you recommend. Our climate, our topographical peculiarities, and our attainments in science influence our manners, customs, and ideas. What are the strangers you have here mostly?

E.—Indeed they come from every corner of the habitable globe. Many from the vast territories to the south of the Mountains of the Moon, and from territories between the oases and the Western Ocean. That fair-complexioned and corpulent gentleman, with a stately gait, and who has the ophthalmia, is a Druid from the North-west. The young man sitting in the narrow shade of the palm-tree is from Ruten. It is a remarkable fact that the Rutens, who originally taught us the mysteries of the science of Khemy, the science of sciences, many centuries ago, now come over to us to perfect themselves in astronomy and to learn our theories, and even the early history of their own country.

G.—There are also traditions current among us that the hill countries and the plains of the Rutens received the first light of civilization from nations inhabiting Asia far to the east of their territories. What is this science of Khemy, which you call the science of sciences?

E.—It is the science of the application of Geology to

Astronomy for making a land habitable, and enabling its inhabitants to cultivate all other sciences and arts ministering to life. Astrogeology governs our mode of thought. It is the type of all our metaphysical generalizations. It is the cause why the theory of numbers, geometry, chemistry, mineralogy, hydraulics, and the great family of the sciences are better cultivated among us than in rainy countries. These things will be explained to you better by-and-by. But to return to what you said,—we also possess traditions among our priesthood that in very remote times the sciences were cultivated in an island of vast extent lying between the Chæpanan islands, which are in the great ocean to the east of Asia and the countries of the Druids.

G.—Do you allude to the island which is said to have suddenly disappeared by being swallowed up in the sea?

E.—The same. But we do not believe that it sank below the sea-level. It has been lost to us by the complete cessation of commercial relations between it and the rest of the habitable world. We have heard of Druid vessels, being driven by storms in a due west course, reaching a great continent which our geographers suppose to have been the lost land.

G.—It is scarcely credible that a continent with which commercial intercourse once existed, and whose inhabitants carried the torch of civilization to the West, should be lost, unless it has been engulfed in the depths of the ocean by a tremendous catastrophe, similar to, but on a vastly greater scale than, the calamities recorded to have befallen islands in the Pontine and Pelasgian seas.

E.—A country may be lost to us without being submerged. It is but lately we discovered extensive islands in the Libyan deserts. They were found thickly inhabited by a race of men who spoke a dialect of our language. They lived by agriculture, and observed those general rules of conduct without which human society cannot possibly exist. They have no rain; nor have they rivers passing through their land. They pierce the ground to a certain depth, introducing into the holes tubes accurately constructed with the wood of the

Acacia, when inexhaustible streams of pure water ascend to the ground-surface and irrigate it night and day. Ruins of temples built by our forefathers were found in those oases of the deserts. When the natives were questioned concerning the builders of those temples, they replied that they had been constructed by a race of giants who had perished in a great flood for their wickedness.

G.—It is a remarkable circumstance in support of the assertion of some that in times past there was a universal deluge which covered the highest mountains, that the tradition of a deluge is extant among all nations and isolated tribes of the human race.

E.—Men frequently have occasion to observe sea-shells in rocks, often in the summits of their highest mountains: and never suspecting for a moment that the slow motions affecting the crust of the earth could in time have elevated those shells with the ground in which they are found imbedded above the sea-level, they are induced erroneously to believe that the sea once rose up to those parts. We do not admit any universal flood, but partial floods which may destroy kingdoms and peoples in a day. The maritime provinces of the Delta of Egypt were invaded by a wave from the sea, and a whole nation, the Bashmurs, who were herdsmen, were destroyed. The upper valley has often suffered greatly from excessive inundation, caused by the breaking down of dykes under the ordinary pressure of water. Should dykes give way when the annual inundations of the valley are at their height, many thousands would perish and be swept out into the sea; and should the land during the maximum of the inundation usually brought over the valley sink half a cubit, all the inhabitants of Egypt would be destroyed.

G.—Is it possible to foresee in time the advent of such calamities in order to take precautions against them?

E.—It is one of our duties, by constant observation of the motions of the earth, to foresee the probable epochs of volcanic paroxysms, and to provide against them by directing the executive authorities to strengthen and raise the complicated system of embankments which cover the valley, to increase the number of boats, and to see that the canals of drainage are kept well scoured of previous deposits of mud. In the meantime we take care of ourselves. You see how high and thick are the solid ramparts of these temples. We instruct the people to obey, in order that in times of pressing emergency they may all work in the proper direction. It is not many years since the whole valley was brought to the verge of total disorganization by the report that the Nile in the fifth day of the month Mesori had risen two cubits in one hour, and that it was rapidly rising, while the signals from the Syene gates at the same time quoted the usual water-level for that season of the year; whereupon your philosophers in the Greek quarter of Memphis spread the news that it was a cataclysm, and that the maritime provinces were already invaded by Neptune. Corn sold for nothing; the people fled to the hills. It took some time to quiet the public mind. We studiously avoid alarming the public, and prefer to withhold from them the knowledge of our science lest they should make an improper use of it. We impart instruction in the Sothoïcal mysteries only to those who are of tried probity and sound understanding. But to return to the subject of our conversation just now:—one of our travellers very recently discovered a country to the east of Palestine containing well-built and fenced cities in solid masonry, and in a state of preservation as if the houses had been just abandoned by their inhabitants.

G.—It is easy to conceive an oasis seven or eight days' distance from the green valley, in the waterless desert, where not a blade of grass grows, remaining unknown for any length of time. But how is it possible that a country containing fenced cities, surrounded by populous districts so well known, should ever have been forgotten? Since the world was created, the human race, from small beginnings, have gone on multiplying and improving and building cities up to our time. The sites of abandoned cities are pointed out and often visited, and their names are transmitted from generation to generation.

E.—You Greeks, like the Hebrews, have adopted a system of cosmogony which would imply that you were better acquainted with the past than the present. We hold that system the most rational which, confining us to the knowledge of the present as a starting-point, allows us to descend to the past, with the aid of history and monumental guides and traditions, as far as we can. We believe that the universe and the human race were created; but we assign no time to the Creator—no date to his works. In a recent papyrus read in the temple of Ptah by the individual who visited the abandoned district just mentioned, it was stated that the land, now an arid desert, abandoned even by the wild beasts of the desert, was intersected in all directions by canals and water-courses, many of which were hewn in the rock, that the cities were supplied with capacious cisterns, into which water had been conveyed in aqueducts, in some cases carried across deep valleys, and that the land itself was everywhere laid out in terraces with immense labour, to enable it to be artificially irrigated, but that the rivers which formerly entered those canals were no longer able to reach them, not on account of impediments offered to their entrance by deposits, but by their having ceased to reach the levels of the original beds of the canals. The author was of opinion that the volumes of the rivers had diminished by the decreased quantities of rain in the Caucasian hills, and suggested that, to restore the country to the blessings of irrigation, it would be necessary to deepen the beds of the canals. The perusal of the papyrus inciting discussion, some of the Memphites were of opinion that the solid crust of the earth had been suddenly elevated by a volcanic paroxysm of a local nature, after which the rivers, having their powers of abrasion increased, gradually scoured down their beds to their habitual sea-levels, that their flood-levels also gradually sinking, the time came when their highest levels ceased to ascend to the levels of the bottoms of the canals, and that the lands and cities being deprived of water, the inhabitants had to abandon their cities and retire to other lands, or had entirely perished. But the priests of Ptah, who have the reputation of being our best architects, engineers, and statesmen, affirmed that, whereas damming up the rivers would now be required to restore that desert to life, the same kind of work had been formerly necessary when the increasing wants of commercial intercourse between Europe and Asia made it desirable that roads through that desert should be established. They conjectured that it was the land of Bashan mentioned in the hermetic books. They said that the land from Arabia to the Caucasus, and beyond the Caucasus, was exposed to ecpyrosis, dating from periods long anterior to the utmost extent covered by the oldest traditions of the human race, and that as the mean velocity of ecpyrosis, as well as of that of cataclysm, is the measure of a cubit in 360 tropical years, the dams which raised the levels of rivers had to be kept up by additional layers of masonry measuring somewhat more than a cubit, in about three centuries and a half, the surfaces of the dams built with the stone of the country generally wearing down more rapidly by the increased force of the water passing over them, than the scouring of the channels and the velocity of the ecpyrosis of the surface of the land.

G.—In what sense is the word 'ecpyrosis' to be understood?

E.—We believe that all parts of the crust of the earth, above or below the sea-level, are in motion, some subsiding and others ascending, and that every part of it experiences these motions alternately. The duration of each kind of motion may be millions of years. A period embracing the two motions we denominate a geological year of two seasons. One of the seasons we call the winter, because the subsidence of the crust of the earth enables rivers charged with depositable matter, to inundate their valleys and promote vegetation and life. The downward motion, or catadysis of the land, produces cataclysm. The other season is called summer, because the elevation of the crust of the earth prevents rivers from inundating their valleys, which are then supposed to be condemned to perish by fire. The upward motion, or hyperchosis of the land, produces ecpyrosis. The ruling season in the basin of the Mediterranean is cataclysmal, but ecpyrosal in Arabia, in Mesopotamia, and in Abyssinia. These are the motions which are supposed to affect the strata of the earth to great depths, and are due to astronomical agencies, which will be explained to you when you attend the lectures of our professors. But those volcanic agencies of a local nature, which affect the prevailing motions of the surface of the earth, are also distinguished as cataclysmal or ecpyrosal motions. When the volcanic motions exceed the velocities of the ruling motions, they have the effect of ecpyrosis in the winter season, and are followed by more or less rapid settlements of the crust of the earth, in the localities affected by them, sooner or later after their extinction. The country to the south of Syene, as far as the lakes to the north of the Mountains of the Moon, has been affected by partial ecpyrosis for thousands of years prior to the date of our present Nilometric observations.

G.—If I understand the subject correctly, a land of valleys and desert plains during the prevalence of a season of the geological year, may become one of forests and snow-capped mountains in another.

E.—Yes; and what is now above the sea may be lowered below the sea-level, and the lands now below the sea, may be raised above the sea-level.

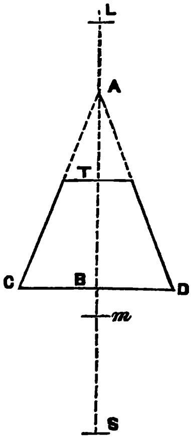
G.—Then, can you predict what will happen to this world?

E.—Not in the sense the vulgar attach to prediction. We know, for instance, that there are basaltic rocks under the granite of Syene, over which the river now falls in a rapid, scouring out a passage for itself about 150 cubits below the average level of the bed of the river at the rapids; and we may predict that in 150 cubits of years the river will have to meet the basalt, which resisting the abrasive power of the river more than granite, the rapids will in time be converted to a cataract, which will close the navigation of the river in that part. But these are idle prophecies. We attend more to things nearer to us, and in which man is an actor. Thus our forefathers predicted to the Babylonians the fall of their empire, and, according to some, even fixed a date for its fall, on their observing the hopeless state of corruption of their social organization, causing the neglect of their public works of irrigation. Those who used the revenues of the land for their personal pleasures started new theories. They succeeded in depriving the sons of Seth of their temporal powers; and voting that the affairs of this world were the business of their gods, their dams, canals, and tunnels remained neglected. A mighty nation, dwelling in well-built cities in green provinces of their own creation, has been reduced, by the operations of famine, pestilence, and wars, to a few tribes roaming over vast plains once cultivated, driving their flocks, the only source of their livelihood, from one spot where rain has fallen, to another where there is a little grass.

G.—This is language I never heard in Greece. I am very desirous of knowing more of these things. What were the dates of the creations of the land of Bashan and the empire of Babylon? Have you a similar date for the Nile valley? Are the Nile valley and its mighty river the works of the hand of man? Do you also depend for your existence on the watchful maintenance of your works of irrigation?

E.—Your thirst for knowledge is praiseworthy; the more so if your object is to be of service to your country. You have put too many questions to me at once. Your curiosity will not be fully gratified until, by a course of moral training among us, you have unlearned many things which have been instilled into your tender mind, at the cost of much time, trouble, and expense. Then you will be admitted to the higher classes, where things are taught which are mysteries to those who have not enjoyed the same privileges. You will be enjoined to speak of them as mysteries, to clothe them in fables, and now and then to make miracles of them, for the vulgar love miracles. The date of the creation of the Babylonian kingdom is recorded in their Siriadic monuments, the most celebrated of which is in the form of an unfinished

Fig. 1.



pyramid, appearing to the uninitiated as if its builders had been suddenly compelled to leave their work unfinished. [The Egyptian, taking the thorn of an acacia-tree, traced on the sand with its point certain diagrams, one of which (fig. 1) was that of the Babylonian edifice.] At the epoch when the base of the edifice C D was laid, it was hidrymatized to the sea-level S, so that the geological section S B of the masonic ordinate S A was made equal to C D. But C D was previously determined to be the measure of some aliquot part of the degree of the meridian of which S A was the middle point; consequently the geographical station being given, the *date* of construction had to be deferred until such time that S B became equal to C D. Now the altitude of the pyramid B A was so adjusted, in cubits, that the geometrical apex A graduated, on a vertical column of time S B L, the epoch of the generation of an Annus Magnus, which is the measure of three Sothis periods. And the plane of truncation T below A was the measure, in cubits, of the number of years which were required for it to be elevated to the Annus Magnus. The last Annus Magnus of three Sothis periods came to a close 920 years ago. And supposing that the plane of date C D graduated 823 years of the last Annus Magnus, T A would have been made equal to $\frac{(3 \times 1460) - 823}{360}$ in cubits, and the locus of the generation of the last Annus Magnus would have been at *m*, *m*B + T A being equal to an Annus Magnus. Thus *m* would be the retrospective date of C D, and T A its prospective date, and *m* A would comprehend a certain number of Anni Magni. Now if B A were made equal to S B, the Siriadic landmark would be perfect.

G.—I conceive that the first and simplest use of the monument after its construction would be, that, knowing its date, we should be able, by comparing B S to B A, to determine the changes effected in the geological section S B. If the operation should be performed in our time, we should find B S augmented by as many cubit measures as cubit measures of years since the date of the monument.

E.—On the supposition that since the date of the landmark the ascensional velocity of the rock on which it is solidly founded kept to the mean velocity assigned to the geological motions in the standard cubit. It is seldom that they agree; and it is principally on that account that geological observations are made. B S is the hydromasonic elevation of the masonic plane of date C D. Having determined its talismanic number and measure, that is to say its original measure, which is nowhere written, you deduct it from the hydromasonic elevation; and the difference, reduced into cubits, will give you the date of the monument, provided you increase it by the measures of the retardations, or diminish it by those of the accelerations existing in the time of the consultation of the monument, and recorded in the accounts of the motions kept in Sarapidan observatories.

G.—But supposing the observations have not been continued to our time, can the landmark respond faithfully to our inquiries?

E.—You can render it vocal, as I said, by ascertaining its date; for all Siriadic monuments are autochronous. And then, ascertaining the difference in level between its base and the sea, you compare that quantity to the measure of the aërial apex (A) of the edifice above its base or plane of date, and the difference will give you the measure and the prevailing direction of the geological motions in a known period of time.

G.—I cannot see clearly how the monument could preserve its own date for any length of time; for several layers might be taken away from its summit by the spoiling hand of man. The wear of the masonry, exposed to the action of the elements, would tend to make the aërial apex recede or fall down the original masonic line. The thalassal level S is vague, and would be apt to rise or sink in absolute level from many causes. How could we tell, after all, to what Annus Magnus the date of the monument would really belong?

E.—These things, and many others you have not foreseen, have been provided against by the architects. Independently of the advantages of the figure of a pyramid, which is capable of restoration to its original figure and dimensions, should any of the masonry composing it suffer from dilapidation, the chronological sections A T and B *m* are reproduced continually in the masonic lines of the exterior, and in the figures and dimensions of the chambers in the interior of the building. The line C D being excavated deep in the rock, the detritus from the exterior superficies of the monument would, in accumulating around its foot, tend to preserve the angular values of the lower courses of masonry. It would be impossible that an epoch in one Sothis period should be interpretable into the like epoch in the Sothis period anterior to it, or in the one succeeding it—and still more so if the dates were in periods of three Sothis cycles. But as a series of monuments in any Siriadic land are made satellites to those preceding them in dates of construction—being all projected on the same cyclic column of time, and in terms of the universal metric standard—it would be impossible to mistake the dates of any in the connected series of landmarks. The sea-level is the lowest secular ebb-level of the equinoctial tides of autumn. That sea-level is considered to be constant, and is assumed to be the base to our river and land canons of ordinates. Our theories and generalizations are constantly altering in proportion to the augmentation of our observations and experience, by consulting the monumental landmarks which cover the coast-lines, the rivers, and the mountains of continents. It is supposed that, the centres of gravity and of the figure of the earth not being identical, the globe has a spiral motion, which in fourteen millions of years would shift the present line of the equator to the polar axis, and that in consequence of the water covering the globe obeying the cosmical motion more readily than the more solid part of it, the land accommodates itself to the figure it should have, not so gradually as the waters, but by more or less sudden efforts, as shown in the prevailing ranges of mountain-chains. But we do not indulge in these theories; and we attribute constancy to astronomical sea-levels, to which, as a fixed base of reference, we compare the motions of the cultivable crust of the earth.

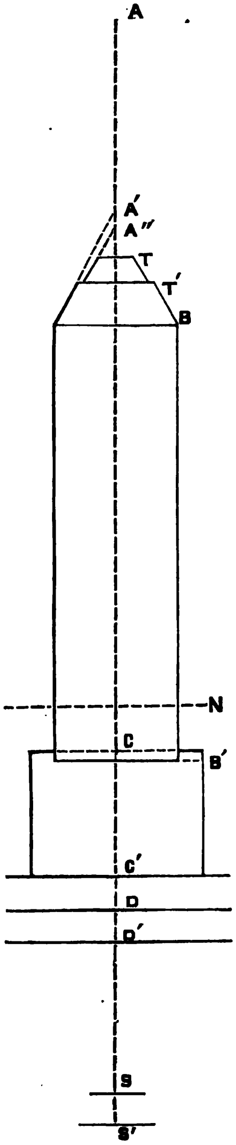
G.—I have gathered from your information that the alpha and the omega of the principles of Siriadic monuments are, the preservation of the metric value of the standard unit of measurements, and the memory of the division of the column of time into sets of three Sothis periods.

E.—So our mathematicians have masonified the mathematical length of the standard cubit in the stone bath deposited in the ark of the first pyramid of Memphis. It is obtained by extracting the cube root of the sum of the 48th part of the solid generated by its three exterior dimensions, and the 12th part of the cubic content of its hollow. We divide the cubit into six palms, and the palm into four dactyles, and the dactyle into fifteen noctas. But the memory of the Sothis scale of time is preserved in our sacred books.

G.—You make use of the expressions 'to masonify,' 'masonic plane of date,' 'lines,' 'altitudes,' the 'masonification of certain measures.' In what sense do you use these terms?

E.—Originally in the sense of records made, not by writings, but by the work of the mason and the architect, and, in like manner, the work of the carpenter. It is the language of geometry, capable of being understood by all nations in all times. Thus, when a chamber has for its three dimensions 60 and 20 and 30 cubits, we say it masonifies the sacred number 360, though the number proceeding from the multiplication of those numbers into each other is a hundredfold of that number. We also apply the term by extension to those numbers in which the degree of knowledge possessed by those who have invented them is made to be latent. Thus the number 11,340 years, as the duration of an undefined cycle, masonifies the knowledge of the relations of lunar to solar years by those who announced it, for 11,340 lunar years are equal to (11,340—340=) 11,000 solar years. There are also graphic masonifications of natural phenomena when they are of a nature to be withheld from the knowledge of the vulgar. Thus the fable of fishes bruising the left sides of their heads in going down the Nile, and the right sides in coming up it, masonifies the geological phenomenon of the westerly tendency of the current of the Nile.

In like manner the fable of Prometheus chained to the summit of the Caucasus masonifies the information that the snowy summit of the Caucasus, which is affected by ecpyrosal motion, is now retained to a certain altitude above the sea-level by the vulture of denudation, the velocity of upheaval being equal to the velocity of denudation.



G.—In other words, should there be notable retardation presently in the ecpyrosal velocity, the liver of Prometheus would grow faster than the vulture could devour it.

E.—Yes; but only from Prometheus becoming less in the reach of the vulture, any augmentation in the velocity of upheaval enabling the vulture to keep the growing liver down to a certain level of the sea.

G.—Have all the monuments we see in this temple-district been projected according to the same rules of construction?

E.—Yes. That fine obelisk to the north of the avenue, and on the right side of the entrance to the great temple, is one of our finest monuments. It is composed of a double pavement, D' D C', a base-stone, C' B' C, and a shaft. The monumental section D' A of its masonic altitude, S' A, comprehends eleven masonic graduations of the first importance. In our time the maximum flood-level of the Nile in the direction of the avenue ranges 802 noctas above the plane C. As there is retardation in the catadysis, recorded in the Memphis Niloscope, measuring 118 noctas, we find that, had it not existed, the level N would have ranged 920 noctas above C. Now C C′ measures 1460 noctas, and C′ D′ 547·5 noctas. We find by inspection that C is the graduation of the generation of the present Annus Magnus, and that the base-stone is dedicated to the Sothis period which was the last Sothis period of the last Annus Magnus. The monument dates 2553·5 Nile years anterior to the Olympic epoch. And as we compute the present year to be the fourth of the 94th Olympic quadriennium, the monument will be 2929·5 Nile years old. The plane of date D′ being hidrymatized to N at the time the first stone of the edifice was laid, and at the same time the geological section S′ D = S′ N of the masonic ordinate having measured the altitude D B, we now find, by consulting the landmark, that S′ D′ + D′ N still remains equal to D B. While the Osirtasic ordinate N S′ remains equal to D B, the hydraulic depth of the plane of date D′ is the measure of the catadysis of the land below the sea-level, *i. e.* about 2809 noctas in 2929·5 Nile years. The shaft of the obelisk masonifies many data connected with the figure and the dimensions of the earth, and records the relations of lunar to solar and sidereal years. The monument records the amplitudes of the Nile in the port of the Reed, in its own latitude and in the point of the Delta, and also the ebb- and flood-levels of the highest tides of the Red and Mediterranean seas in Clysma and Racotis, the two great maritime ports of Egypt. For the talismanic measure B D, demitted successively from C and D and D′, recorded the highest level of the Red Sea, the lowest of the Mediterranean, and the lowest of the Red Sea. Now the thickness of the pavement C′ D′, projected twice down from the masonic plane C, marked a point from which D B being demitted indicated the level of the highest tides of the Mediterranean. Thus this border-pillar became the balance of the three seas, by a great equation of a masonic nature which could only be realized in the particular epoch chosen for the date of its establishment.

G.—What is the meaning of Osirtasic ordinate?

E.—It means an ordinate connecting a salt-water with a fresh-water level, the word Osirtas being compounded of two Nubian words, one of which means fresh water, and the other sea-water.

G.—This is a wonderful monument. I always suspected that these expensive columns were not constructed for merely ornamental purposes. They are gnomons, but not as sundials. Here is a monument dedicated to Ptah, to Sol, to Luna, to the four winds, to the courses of the chariot of the gods, to the land and to the three seas, to the figure and the dimensions of our earth, and self-dated.

E.—Yes; and it is a satellite to the first pyramid, the laddered one; and it is the tenth part of it in masonic altitude, the S.W. and N.E. diagonals of both monuments being on the same circle.

G.—What king raised this monument?

E.—Ammanemes II., the second king of the seventh dynasty of our Niloscopic lists, and the first dynasty of Diospolites of thirty-three sovereigns. He commenced to reign eighty-four Nile years prior to Sesostris.

G.—Can you read the inscriptions on the four sides of the shaft? I should like very much to know their meaning.

E.—When you have completed your studies in our university, the last thing which will be communicated to you, with injunctions to keep it a secret, will be the meanings of these inscriptions.

G.—Have you older monuments than this in the sacred enclosure of Heliopolis?

E.—Many that are much older. Observe how within this limited area the monuments of different epochs appear to have been more or less buried up in the alluvial deposits made by inundations admitted into the enclosure of the temenos.

G.—If the surface of these deposits in the temenos be perfectly level, will not the taphral depths of the planes of date of the monuments bear a direct metric proportion to their respective ages?

E.—Yes. The mean level of the surface of the grove now ranges about half a cubit above the surface of the pavement C′

of the obelisk, and about 4 cubits and 13 dactyles above the plane of date of the sitting figure of Mencheres II. But the plane of date of the great Sphinx at the western extremity of the southern row of smaller sphinxes forming this avenue, which was hidrymatized to N in the opening of the present Annus Magnus, ranges about 3 cubits and 13 dactyles above the same mean alluvial level. You see clearly why the taphral depths of monuments of antiquity are of no avail in such matters, inasmuch as the same level of soil which covers some monuments has not yet reached others.

G.—But surely the sedimentary deposits cover the pavement on which the bare stone of the great Sphinx has been placed.

E.—Certainly. But the plane of date of the great Sphinx is the superior plane of its field or base-stone.

G.—Then the same rules are not applied to all Siriadic monuments. Are there certain rules to be employed to distinguish the exceptions to what you said was the general rule?

E.—There are such rules. Ramses I. made the Sphinx a satellite to the great pyramid, by making it a satellite to the Obelisk of Ammanemes II., by adjusting the plane on which the Sphinx reposed to the level of the superior plane of the base-stone of the obelisk which was dedicated to the great epoch, prospectively, in the time of Ammanemes. In the time of Ramses I. the pavement-level of the obelisk was not reached by the alluvial deposits. The increase of the annual durations and heights of the filtration-water from the outer inundations becoming inconvenient, we have allowed the inundations to enter the sacred enclosure and to deposit the earthy matter they hold in suspension, in order to raise the surface and to diminish the duration of the inconvenience from filtration-water. We could have raised the alluvials much higher if we had thought proper. The time will come when it will be absolutely necessary to raise the pavements themselves, and adjust them to higher levels.

G.—Of course without touching those parts of older pavements on which monuments are erected.

E.—Certainly not. Yet we have examples of monuments with their foundation-pavements having been raised. The monument of Sesostris in Memphis was raised by Ramses II., and rehidrymatized to N in the first year of his accession to the throne, which year was concurrent with the 145th of the present Annus Magnus [B.C. 1322–144 = B.C. 1178th Nile year]. Some say that it was in the second Nile year of his reign that the Sesostrian statue was raised up, because it graduated the tenth part of the Sothis period then current. Such mutations of monumental land-marks were not usually permitted, unless the graduations of the epochs of the reigns of kings on the Sothoïc scale happened to be suitable. Ramses II. did not destroy the scientific data masonified in the Sesostrian monument, but, preserving them, he added others, which rendered the monument more valuable. About 120 years ago Darius the son of Cyrus wanted to have the same statue raised up to N in his time; but as the thing could not be done without destroying the valuable records latent in it, the monarch consented that it should not be disturbed.

G.—Our travellers have confounded Sesostris with Ramses the Great and with Ramses II. I shall write to Athens to tell them of their error.

E.—Keep the information to yourself. You will have all those rhetoricians and philosophers who have confounded the two kings in their writings your enemies. The proper way is to let them find out themselves that they have made a great mistake. Give them the pleasure of saying that they have themselves discovered the error. When you have completed your studies, and return to your country, you will teach your countrymen things which will render your name great in the world.

G.—I will follow your advice. What is the age of the oldest Siriadic monument in Egypt?

E.—The oldest is supposed to be the astrogeological Niloscope of Memphis. The existing lists of connected observations extend 5460 Nile years back from our time to the reign of Menes the Thinite; but they are dated 50 Nile years earlier.

G.—But surely you would not affirm that the human race in that remote epoch were sufficiently advanced in the sciences to know the existence of motions in the crust of the earth!

E.—The human race prior to the epoch of Menes were in every respect such as they are in our time; but they have suffered alternations in improvement and decadence, according to circumstances, in which they have always been the principal actors. The first pyramid of Memphis, which dates 789 Nile years after Menes commenced to reign, shows us by the information it masonifies that the Egyptians who constructed it were far more advanced in the sciences of life than we now are. It is a monument of the commerce, the wealth, the astronomical and geographical knowledge, and the civilization of the people in that remote period. Memphis was a great city thirty-five centuries prior to the epoch of Menes, in whose time the benign influence of the Egyptian government was extended up the Nile valley as far as those latitudes in which the hippopotamus dwells.

G.—Have we evidence in the writings of contemporaneous authors, whose acquirements and good character should render their statements credible, that eighty-seven centuries before our time Memphis existed as a city.

E.—Contemporaneous monuments raised in many parts of the world only a few centuries ago have been reduced to dust and have totally perished. We have no writings dating so far back. The oldest writings extant are few, and only those which justly enjoyed the character of being worthy of credit. But our oldest monument, in a certain sense, is the Nile valley itself. On the subject of the valley you will hear ample discourses. I may, however, now mention an excavation which was made forty-two years ago in the outer skirts of the city of Memphis by some foreigners sent from the land of the Druids. That excavation was sunk about 23 cubits below the surface of the soil, and the ground passed through was found studded with remnants of the work of man. It was supposed that the lowest part to which the excavation was carried, and in which abundance of baked clay fragments and particles were found incorporated with the soil, had once occupied the surface, and had been warmed by the sun's rays, and trodden upon by man, and that the stratum over it was formed gradually by the Nile depositing fresh layers with the same velocity as that with which it was depressed by the geological motion of subsidence; and that, the mean velocity of the generation of the stratum being a cubit in 360 Nile years, the portion examined had taken 8280 Nile years to be formed, and that during the whole of that period the locality was occupied by civilized man. It was determined that the age of the stratum admitted of being approximated to, but not its date, nor the dates of those periods and measures of work which the Nile had been permitted to perform by man; 23 cubits of time being assignable to it on the supposition that from an unknown epoch corresponding with the bottom of the excavation, the superior part of the stratum had been allowed to be continuously accumulated with the mean velocity attributed to the geological motion.

G.—Is it not probable that the excavation was made in a well formerly existing there only ten or twelve centuries ago, and which had been filled up with soil containing the remnants of pottery and similar things, in more recent times?

E.—It is equally probable that the fragments found in the deepest part of the excavation had been thrown up in a mound of rubbish soil ten centuries prior to the epoch assignable to the bottom of the excavation, which is simply a taphral depth of 23 cubits of years. You see how much higher the inhabited part of Heliopolis is above the mean level of the valley. Its soil is composed of the ruins of the former edifices of the town, and many of the houses now inhabited date several centuries ago. Yet the alluvial accumulations in the valley, gradually encroaching on the present mounds, will in time cover the present levels of its streets and open places.

G.—I heard when I was in Athens something about that excavation. The inferences drawn from its phenomena were pronounced to be of no value by our antiquaries, on the ground that some fragments of pottery were found at the bottom of the excavation, bearing ornaments which existed in Greece only 475 years ago, and that the epoch of the deposit, 23 cubits in depth, should date rather after than before the date of the invention of that kind of ornament, of which from its beauty and elegance the Greeks claim to have been the first designers.

E.—The oldest pottery found in Greece bearing that pattern of ornament, may have been traced back to the date assigned by your antiquaries. The utmost we can grant to your antiquaries is that the Greeks were the inventors of that ornament; but the great depth at which a specimen of the pottery they claim to have made is found is a proof that they existed, and that there had been commercial intercourse with us, possibly nine or ten thousand years ago. I recollect that on the same occasion the Hebrews became exceedingly alarmed, and maintained that, as mankind had not employed bricks calcined in fire for building-purposes earlier than 925 years anterior to the Menophrean epoch, the presence of red bricks throughout the whole of the excavation was, in their estimation, a manifest proof that the utmost length of time assignable to the formation of Memphis could not exceed, but should be much less than eighteen centuries. As their fears were grounded on some erroneous interpretations (of their own invention) of the sacred books which they originally derived from us, nobody took the pains to discuss the matter with them.

G.—Is it not possible to probe the soil of the valley deep enough so as to pass lower than the earliest zones of the alluvial accumulations containing traces of the existence of man in the Egyptian valley?

E.—There is diversity of opinion on that subject. The prevalent notion is, that the most durable of the works of man perish in the under strata by mechanical and chemical operations affecting them as they descend with the geological subsidence, the principal agent of destruction being the motions of the river. It is supposed that there is a vanishing-point below which even the khemy (dark argillaceous deposit) no longer preserves its distinguishing characteristics, and merges into a dyke which is in process of generation, and to which the khemy is but a rind or covering. We can fix no positive date to the presence of man in Memphis.

G.—I do not know how these things will be received in Athens, where it is the general belief that the world itself was created only 4004 years before the fall of Troy.

E.—We are in the habit of prefixing to our historical relations and political annals certain introductory discourses in scientific chronology. Some of our oldest writers masonify in the beginnings of their books certain arithmetical monograms which have the virtue of introducing their books to the attention of the highest classes of the learned as works of those who belong to their society, whatever be their nationalities and countries. Such monograms are often of a Sabean nature, and can be understood only by Sabeans and those who are initiated in the mysteries of the monumental sciences. There is a great variety of such monograms. Yours is one of the most celebrated. The date of its invention is not known. It is to the effect that the quotient of the division into four thousand equal parts of the difference between 4004 Egyptian years of 365 days, and seven times 70 days, will be equal to $365^d\ 5^h\ 49^m\ 12^s$, which was the length of the 4925th tropical year anterior to the Olympic epoch. It is useful to know these things. But let us return to the subject of the valley's sections. Imagine a column of some imperishable material to have been erected in the middle of the valley, and to have been made to stand firmly on solid rock, and that an unknown portion of its shaft is now buried in the alluvial deposits of the river. If we make a circular mark on the shaft identical with the maximum Nile-level laving it, and another indicating the mean level of the alluvial plain surrounding it, in any epoch of the natural year, the same water- and land-levels will be observed to rise up the shaft of the column from year to year; and if we suppose that they left rings in the same epochs of every natural year, the spaces between the rings would be the measures of the apparent rise in equal intervals of time—

G.—And the vertical measures from the rings down to the bottom of the stratum of Khemy, and to the sea-level, and to the centre of the globe of the earth would remain constant, assign seventeen to Nechao I. Then Nechao II. will be the fourth instead of the fifth in succession. The short reign of Psammecherites may be considered to be concurrent with the Persian conquest. This dynasty has been evidently altered to obviate the possibility of the Sothoïcal mysteries being discovered through the realizations of the known synchronisms, while the clue to truth has been provided for the use of the initiated. The number assigned to Vaphris is the duration of the interregnum; and the number written against the name of Amasis diminished by the interregnal number leaves the duration of the reign of Vaphris.

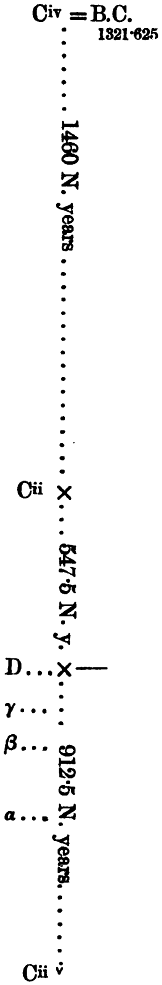
These are the dimensions of the Saïte monolith chamber given by Herodotus:—It measured exteriorly *twenty-one* cubits in length, fourteen cubits in breadth, and eight cubits in height. Its interior measures were eighteen cubits and twenty dactyles (the pygon being the five-sixths of a cubit) in length, twelve cubits in breadth, and five cubits in height. Then, to find the date of the *twenty-first* Nile year of the monarchy of *Amasis* from the medius ævorum—reduce the difference between the exterior and interior lengths into noctas for Nile *years*, and let the difference between the two breadths be *months*, and the difference between the two heights be *days*; and the second differences of the remainders will be 779 yrs. 11 m. 3 d. Thus:—

	Length in years.		Breadth in months.	Height in days.	
	Cubits.	Dact.	Cubits.	Cubits.	
Exterior	=21	0	14	8	
Interior	=18	20	12	5	
First difference	= 2	4	2	3	=780 y. 63 d.
Second difference	= 2	4	2	3	=779 y. 333 d.

From the invasion of Egypt by Cambyses until the expulsion of the Persians from Egypt, which took place *in* the second year of the reign of Darius Nothus, the lapse of time was a hundred and four years. In measuring down from the graduation of the year of the conquest of Egypt by Alexander—sixty-eight years and four months—to the opening of the Mendesian dynasty, we shall obtain a space of twenty-two years and six months to the middle of the second year of

Darius Nothus, for the reign of Amyrteus the Saïte. As Darius Nothus reigned twenty years, the residue of his reign in Persia appears to have been inserted in the Manethonian lists, and to have been made to overlap the reign of Amyrteus. I have nevertheless assigned to the number appended to his reign the value of the observed catadysis during his reign, the chronological excess not exceeding four years between the closing epochs of the two reigns.

In examining the lower dynasties, it has already been stated why the first dynasty of Thinites was divided in two sections. The reason why the following dynasty, of Memphites, was also divided in two sections was, that the dividing line passing through the eleventh summer solstice of the reign of Soris, and the first ten years of his reign being purposely omitted, the pyramid epoch was marked. For the three largest pyramids of Gizeh being geographical monuments, their retrospective measures on the column of Sothis periods were dated to the close of the sixtieth year of the Sothis period. These measures Manetho has given, leaving it to be afterwards discovered that Soris reigned thirty-nine years instead of twenty-nine. Thus 263 + 302 + 214 = 779 years (more correctly, 778·944 years, as will be seen hereafter when we examine into the records of his monument), and, in metric noctas of the standard Nile cubit, the measure of his successor 808 noctas, and 1248 for Nitocris. We have shown why the Elephantinite dynasty should precede the second Memphite dynasty. But the fifth political period would seem to have been a period in which the Egyptians had decennial magistrates, and the thirteenth archon at the expiration of his office assumed the imperial power,—the people having found that such apparently free governments were worse than the preceding ones. The last archon was Achthoes, an Heracleopolitan by birth, who established the Heracleopolitan dynasty. He was assassinated by a Crocodilopolitan citizen. The dynasty lasted 616 years. The seventh political period, of Diospolitan kings, lasted 672 years. It was followed by a Xoïte dynasty of 184 years. The ninth period was the dynasty of Hellenic Shepherd-kings, which endured 470 years. It was followed by the dynasty of Eastern Shepherds, which lasted 483 years. The duration of the reign of Saïtes (or Salatis) in the masonic formula of the numbers of reigns in the seventeenth dynastic section of the lists is procured by adding the cataclysmal duration of the reign of the king to the difference between twice that duration and twice the number 43.



The Sabean has ingeniously availed himself of the regnal and geological sections of the opening of the first dynasty of Diospolitans and the date of the Heliopolitan border pillar to record the measure and the graduations on the column of years of the second Sothis period anterior to the Menophrean. In a section of the geological column, comprehending the two Sothis periods anterior to the Menophrean epoch, C^{iv}, C^{iii}, C^{ii}, let D be the chronological graduation of the Heliopolitan obelisk. Make $\alpha\beta = 43{\cdot}8$, and $\beta\gamma = 16{\cdot}425$; and let $\beta D = \alpha\beta$. Then $\frac{100 D\gamma}{3}$ will be the prospective date of D to C^{iii}, and $\frac{100\beta\gamma}{3}$ the retrospective date of D from C^{ii}, and $\frac{100\alpha D}{3}$ will be the measure from C^{ii} to C^{iv}. Convert $D\gamma$ to Nile years, and demit it from D to obtain the commencement of the reign of Ammanemes II. Also convert $\gamma\alpha$ into Nile years, and demit it from the reign of Ammanemes II. to obtain the epoch of the establishment of the dynasty. The sum of Nile years from α to C^{iv} amounts to 2095·1. Adding to that sum the value of the section $D\gamma$ reduced to Nile years (27·375 lunar years = 26·553 solar years), we obtain the Manethonian number 2121·653 in the end of the second book.

The principal measures on the Egyptian historical column worthy of memory are the following:—Niloscopic accounts being kept in Nile years of summer solstices, and the chronological heights arranged by kings and the statures of their predecessors being epochs common to their accessions and to the demises of those to whom they succeeded, measured on the geological column of years from some indicated Sothis period, we find (1) that from the commencement of the third Sothis period before that of Menophres, which was the beginning of the last Annus Magnus, up to the epoch of Sesochris the measure of time was a cubit and a half of the Sothis scale; (2) that from the Sesochrian epoch up to the date of the fourth pyramid of Gizeh the measure was two cubits and a half of the Sothis scale; (3) that from the date of the fourth pyramid of Gizeh up to that of the Heliopolitan obelisk (a monument erected in front of the Egyptian University of Heliopolis) the measure was also two cubits and a half of the Sothis scale; (4) that Lachares stood a century of years above the epoch of the Heliopolitan obelisk; (5) that from the close of the reign of Sesostris, the predecessor of Lachares, the measure down to the first summer solstice of the reign of Soris was four cubits and a half of the Sothis scale; (6) that from the first summer solstice of the reign of Soris the measure down to the commencement of the Annus Magnus was 829 years, and to the Manethonian graduation of the initial year of Menes 779 years; and (7) that from the date of the first pyramid of Gizeh the retrospective measure to the commencement of the Annus Magnus was 839 years, and the prospective measure to the close of the Annus Magnus twelve cubic measures of the sexagesimal scale (12 × 360 = 4320 years). These are the great beacons for the navigation of the ante-Menophrean channel of the Egyptian sea of time. But the post-Menophrean landmarks worthy of memory are the following:—(1) That from the Menophrean epoch up to that of the establishment of the Olympic quadrienniums the measure is 545 Nile years; (2) from the Olympic epoch up to the Nabonasarian the measure is two dactyles of years (or thirty years); (3) from the epoch of Nabonasar to the epoch of the destruction of Judah by Nebuchadnezzar 155 years; (4) from the destruction of Judah to the conquest of Egypt by Alexander the Great 260 years, or 990 years from the Menophrean epoch; (5) from the conquest of Egypt by Alexander to the epoch of the Hegira 954 years; and from the epoch of the Hegira to our time the measure is 1240 Nile years, making in round numbers 3888 years from the Menophrean epoch.

Having *constructed* the Egyptian section *on the scale of Sothoïc periods*, we shall be able to solve every problem of chronology concerning the political histories of the Hebrews, the Greeks, and the Babylonians. If we inquire into the origin of what is called 'the Hebrew era,' we shall find that its initial graduation on the column of time measures, anteriorly to the epoch of the destruction of Judah by Nebuzar-Adan, 3000 Nile years. But as the epoch of the destruction of Judah was purposely deferred until the middle point of the Menophrean period of Sothis, the year 1861 of the epoch of the Nativity of Christ will measure $2270+\frac{1460}{2}+592+1861=5453$ Nile years = 5621·649 lunar years, on the supposition that the Menophrean epoch dates in B.C. 1322. But the measure of 3000 solar years was not an arbitrary quantity of time: it was connected with the record of the precise epoch of the present tropical cycle in which the solar or tropical year obtained its maximum of length, and of certain other sections of the greatest importance in the political history of the Jews, as we shall demonstrate in the sequel.

The Hebrew chronological system is based on that of the Egyptians. It is divisible into five sections. The first section embraces the period from the epoch of the generation of the fourth Sothis period anterior to the Menophrean up to the time of the birth of Abram. It is from the graduation of the birth of Abram on the column of years that (1) the Samaritan version of the Patriarchal chronologies records the measure of the epoch of the fourth Sothis period in sacred years of 360 days; (2) that the Septuagint version of the Patriarchal chronologies records the measure of the epoch of the generation of the third Sothis period in lunar years of 354 days; and (3) that the Hebrew version of the Patriarchal chronologies records the measure of the epoch of the generation of the second Sothis period anterior to the Menophrean in tropical years. Thus the three versions have combined to construct a scale of Sothis periods between them. The Sothis epoch described by the Hebrew version is that of the fourth pyramid of Gizeh, which belongs to Mencheres II. (the Pious, or Holy, or Saviour). It occupies the middle line between the Sesochrian or Samaritan and the Menophrean epochs. The two Evangelists confirm the scale by marking the Menophrean epoch and that of the birth of Abram.

The key to the Hebrew chronological system is the Chronological Revelation made to Abram in Mamre, and the Zootomic formula preceding the Revelation. The following is the order of the clauses of the Revelation, and their amplifications introduced between the parentheses:—

"Know of a surety that (in the eighth month of the ninety-seventh lunar year from the present time) thou shalt go to thy fathers in peace; and thou shalt be buried in a good old age (of 175 lunar years), and (three generations of lunar years after thy death) thy seed shall be a stranger in a land that is not theirs, and shall serve them, and they shall afflict them (twelve generations of lunar years after the arrival of Jacob in the land of Egypt, and 130 lunar years after Joseph's slavery) 400 (lunar) years. And afterwards they shall come out with great substance. But in the fourth generation (after their departure from Egypt) they shall come hither (to Mamre) again: for the iniquity of the Amorites will then be full. And that nation (the Egyptians) whom they shall serve will I judge."

The Zootomic formula masonifies three complementary numbers, with the aid of which the Patriarchal genealogies of the three versions effect the description of the scale of Sothis periods based on, or in terms of, the Egyptian astrogeological Nile records. The three accounts, though dissimilar, concur to give authenticity to the one which served their compilers as a common foundation to work upon and to perpetuate. The addition of the collective ages in years, of the heifer, the she-goat and the ram, and the two birds, to the number of the animals produces the number sixteen. Halving the carcases of the three quadrupeds, the number becomes twenty-two;

and the addition of the two birds and their collective ages (which in the third stage of the masonic formula would not amount to two years, the pigeon being designated 'young'), the number twenty-six, less by the fraction of a year, is obtained.

According to the masonic equation of the genealogies of Matthew, the distance of time from the birth of Abram to the birth of Christ measured forty-two generations of solar years. Three generations make a century of Nile years. Consequently 1400 Nile years demitted from the true graduation of the Nativity will descend seventy-five Nile years and ninety-five hundredths of a Nile year (75·95) below the *Menophrean epoch*, and indicate, not that the birth of Abram dated 75·95 years anterior to the Menophrean epoch, but that Abram was 75·95 Nile years old when the chronological revelation was supposed to have been made to him in Mamre.

But the genealogical scheme of Luke differs greatly in scope and in its numeral values and in form from that of his contemporary; yet it confirms Matthew's account and those of his successors. Instead of beginning his book with the genealogies as Matthew had done, he states that Jesus was twelve lunar years old when he was taken to the temple; and it is only after the relation of the baptism, when Jesus was about thirty lunar years old, that he commences his genealogy, descending, in the order of events marked in the cataclysmal season, seventy-three generations (of three generations to a century of Nile years), from the birth of Joseph down to the creation of Adam. These seventy-three generations form the central section of an ordinate; to which are added two other generations of a masonic nature—one to each extremity of the central section. We may designate those two outer sections, the terminal sections of the central section; for when the whole ordinate is conceived to be doubled in two, the graduation of the birth of Joseph (the reputed father of Christ) will coincide with the graduation of the creation of Adam (the reputed son of God), and the graduation of the birth of Christ will coincide with the birth (in a masonic sense) of the Creator of Adam. But the sum of twelve lunar years and not quite thirty lunar years, which was the age of Jesus when his genealogy was drawn up, added to the two terminal generations and to the half of the central section, will produce a measure of time which will graduate the *Menophrean epoch* when it is demitted from the true epoch of the Nativity. The greater age of Christ will be $1324{\cdot}05-(11{\cdot}64+66{\cdot}66+\frac{2433{\cdot}33}{2})=29{\cdot}08$ Nile years $=29{\cdot}975$ lunar years.

The complementary record which gives value to a Sabean formula, in the case of the masonic scheme of the genealogies of Luke, involves the determination of the date of the birth of Abram. The sum of the two ages of Christ, in Nile years, being deducted from the difference between the central section and the double of the terminal sections, will give a space of time which, being demitted from the true epoch of the Nativity, will graduate the historical epoch of the birth of Abram in Nile years. Thus, $2433{\cdot}33-(133{\cdot}33+\overline{29{\cdot}08-11{\cdot}64})=2282{\cdot}56$ Nile years.

The measure on the Sothoïc column of time assigned by the Evangelists to the Nativity was the close of the 1365th lunar year of the Menophrean epoch. There were two other epochs assigned to the Nativity; one was the 1360th, and the other the 1354th lunar year from the Medius Ævorum. The one we have adopted is the middle point between the 1360th and 1365th. The Dionysian determination was, then, a point on the column of time which was fixed with the previous knowledge of the positions of the other epochs, and constitutes a standing record of the existence of the other epochs. It will consequently be proper to reduce the Evangelists' date of the Menophrean epoch and of the birth of Abram to the Dionysian scale. Thus, $1362{\cdot}5$ lunar years $=1321{\cdot}625$ Nile years B.C. for the Menophrean epoch; and $2282{\cdot}56-2{\cdot}425=2280{\cdot}13$ B.C. for the birth of Abram.

This is the Samaritan record:—

B.C. 2280·135 . . . . . The birth of Abram.

2446·338 Sacred years of 360 days from the creation of Adam to the birth of Abram.

+22 . . Sacred years. The second complementary number in the Zootomic formula.

$2468{\cdot}338 \times \frac{360}{365\frac{1}{4}} = 2433{\cdot}11$ Nile years.

+2432·859

B.C. 4712·994 . . . . . Date of Julian period, and of the Great Sphinx of Suphis II.

+2432·859

+ 15·77 $= 16 \times \frac{360}{365\frac{1}{4}}$ The first complementary number in the Zootomic formula, reduced from sacred into Nile years.

B.C. 7161·623 . . . . . Epoch of the generation of the fourth Sothis period anterior to the Menophrean. It may be also designated the Samaritan Sothis period, and the Sesochrean.

The second record is the one in the Septuagint version of the Patriarchal genealogies. It is the work of Manetho himself. Its accounts are in lunar years, and the supplementary number is also in lunar years.

B.C. 2280·135 Nile yrs.. The birth of Abram.

3631·691 Lunar years from creation of Adam to birth of Abram.

−130 Lunar years of 354 days, the value of the intercalation of Caïnan II. in the Septuagint version.

+3396·640= 3501·691 Lunar years of 354 days.

+ 24·849= 25·617 Lunar years of 354 days, the third complementary number in the Zootomic formula.

B.C. 5701·625= . . . . Epoch of the generation of the third

Sothis period anterior to the Menophrean. It is the commencement of the Annus Magnus, and the zero of the Niloscopic accounts to our time. It may be designated the epoch of the Menaïc period of Sothis.

But the record of the Hebrew version is in Nile years; thus:—

B.C. 2280·135	. The birth of Abram.
2046	Nile years from creation of Adam to birth of Abram.
−100	Nile years, the value of the intercalation of Caïnan II. in the Hebrew record.
1945·5	Nile years.
+ 15·989 = . . 16	Egyptian years of 365 days, the first complementary number of the Zootomic formula.
B.C. 4241·625 Nile yrs.	Epoch of the generation of the second Sothis period anterior to the Menophrean. It constitutes a middle line between the Samaritan and the Menophrean epochs. It may be designated the Mencherean epoch, or that of the fourth pyramid of Gizeh.

We will now compare the Patriarchal genealogies of the three versions with the astrogeological Nile lists of Manetho. The Manethonian sections of Nile observations which are called "the dynasties" will be numbered in Roman numerals from the first, of Thinites, up to the nineteenth, of Diospolitans, inclusively. His nineteenth dynasty is the post-Menophrean section of cataclysm, which lasted 204 Nile years and measured 209 noctas. The ecpyrosal sections are marked with the letter B. The claim of the Samaritan to greater antiquity than the Hebrew rests only on the circumstance of its recording the epoch of the generation of the second Sothis period anterior to the one recorded by the Hebrew lawgiver, confirming the Mosaïc graduation by making it occupy a middle line between the Menophrean epoch and the graduation pointed to by its own chronological scheme. We shall perceive that the authors of the Samaritan genealogies lived after B.C. 1118; and as the Hebrew text does not refer to the Nile lists posterior to the Section XVII., embracing only the ecpyrosal periods from Menes to the year of the Exodus, these Egyptian Nile lists strongly confirm the universal tradition that Moses, a man learned in the wisdom of the Egyptians, wrote the first books, and that he made use of copies of the historical Nile accounts to refer to when he devised the scheme of recording the generations of Sothis periods. But the Septuagint version of the chronologies was most probably the work of Manetho, a Sabean (one of the sect of the Arions) of the children of Seth, in the time of Ptolemy Philadelphus, who is known to have written a history which he entitled 'Sothis.' The following is the comparative Table showing the intimacy of the connexion between the three systems of Patriarchal genealogies and the geological lists of the Egyptians.

The inspection of this comparative Table will convince the student of the close alliance between the Patriarchal numbers and those of the Nile lists. We see at a glance the intercalary character of the hitherto inexplicable presence in one account, and the absence in another, of a second Caïnan; and the necessity why the section for Amos, whose name is mentioned in the lists, but no time is assigned to it in them, should be 25, and that it should have an ecpyrosal value. On the other hand, the adoption of the ecpyrosal number 43 into the cataclysmal column of time by the Samaritan, its rejection from the ecpyrosal column of time by Moses and Manetho, the adoption of twice the cataclysmal number of 16 noctas in the column of cataclysmal measures by Manetho, the duplication of the ecpyrosal Sections XVI. and XVII., and the omission of the 43 noctas of ecpyrosis in his ecpyrosal column of measures, are evidences that those Patriarchal chronologies are not of a historical character in Hebrew history, but had for their basis accounts in measures of time and space of Egyptian geochronological history existing before the epochs in which they were drawn up. It is also probable

The Manethonian Nile Lists.

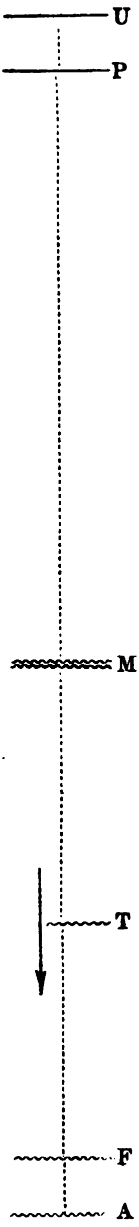
The Dynastic Sections.	The measures of the ecpyrosal and cataclysmal motions in metric noctas.	The measures of the ecpyrosal motions in metric noctas.	Durations of the Cataclysmal Sections.	Durations of the Ecpyrosal Sections.	The Patriarchs, and the spaces of time intervening between their births only.	The Samaritan numbers.	The Septuagint numbers.	The Hebrew numbers.
	Metric noctas.	Metric noctas.	Nile years.	Nile years.		Sacred years.	Lunar years.	Nile years.
XIX.	 209	....	204	....	Terah	70	170	70
XVIII.	 263	....	262	....	Nahor	79	179	29
	Amos 25 B	25 B	....	....	Serug	130	130	30
XVII.	.... 151 B	2×151 B	....	151 B	Reu	132	132	32
XVI.	.... 518 B	2×518 B	....	518 B	Peleg......	130	130	30
XV.	 284	....	284	....	Eber	134	134	34
XIV.	.... 184 B	184 B	....	184 B	Salah......	130	130	30
XIII.	.... 453 B	453 B	....	453 B	(Caïnan II.)	100	130	100
XII.	 160	....	160	....	Arphaxad ..	135	135	35
XI.	.. 2× 16	....	16	....	Shem......	100	100	100
	.... 43 B	43 B	43 B	(43 B)				
					Sums ..	1140	1370	490
X.	.... 185 B	185 B	....	185 B	Noah......	500	500	500
IX.	.... 409 B	409 B	....	409 B	Lamech....	53	188	182
VIII.	.... 146 B	146 B	....	146 B	Methusaleh.	67	187	187
VII.	.... 0·2 B	0·2 B	....	....	Enoch	65	165	65
VI.	 203	....	197	....	Jared......	162	262	162
V.	 248	....	218	....	Mahallaleel.	65	165	65
IV.	 284	....	284	....	Caïnan I. ..	70	170	70
III.	 214	....	214	....	Enos	90	190	90
II.	 302	....	302	....	Seth	105	205	105
I.	 253	....	263	....	Adam	130	230	130
	2)4523·2	2)2740·2 B			Sums ..	1307	2262	1556
	2261·6	1370·1 B						
					Post-Noachid section ..	1140	1370	490
					Ante-Noachid section ..	1307	2262	1556
			2447	2046	Sums total..	2447	3632	2046

that the Patriarchal chronologies had other useful values, before they were made to describe, by the introduction of "*second Caïnans,*" the Sothoïcal scale. What the Patriarchal numbers originally expressed may be determined by the astronomer and the mathematician. A suggestion may, however, be offered, that if two cylindrical sticks be made, one in ebony and the other in box-wood, and be joined together by making a graduated stem projecting from the extremity of one of the sticks to slide into a hole drilled in one of the extremities of the other stick, so that when they are closed well together they shall make a straight cylindrical rod, and, calling the central line of the junction of the two halves the epoch of Noah's flood, there be marked on the stick the several distances of the epochs of the *births* and *deaths* of the patriarchs from the central line to the right and left, the stick will be irregularly graduated into a linear measure which may still be employed to measure the depths of those water-levels which fall below the Mastaba (a horizontal landing-place in solid masonry in the Niloscopic chamber, from which circular and continuous measurements of the hydraulic levels are taken up and down the vertical escarps of the walls of the chamber from day to day, from year to year, and from generation to generation, without break or intermission for centuries and Sothoïc periods, and their values punctually noted in books by hereditary seers).

The first Hebrew historical period commences with Abram, and closes at the epoch of the Exodus from Egypt. It is the second section of Hebrew chronology. With the exception of the numbers of years having reference to Jacob and those which bear a masonic character, such as the number 600 of Shamgar, the chiliad of Samson and of the hydrogeological and astronomical formulæ of Joshua, of Gideon, of Elisha, of Isaiah and others, all the other numbers of years mentioned in the historical books and chronicles, and in the relations of political matters in the Hebrew writings, are in lunar years, from the date of the birth of Abram upwards. The Jews computed time in lunar years as they do in our day. And the Egyptians reckoned time in Nile years and sidereal years and lunar years* simultaneously; and they have continued the same method until our time. When Jacob stood up before Pharaoh Beon, on his first introduction by his son Joseph, the patriarch, knowing the custom of the Egyptians (though they understood perfectly the relations between lunar and solar and Sothoïcal years), replied to the question put to him by the king as to his age, in Nile years, out of respect and courtesy, because the Egyptians used Nile years to date their transactions. The Niloscopic accounts, however, were kept in Nile, lunar, and Sothis years.

The measure of time from the birth of Abram to the death of Jacob is given in the book of Genesis. But we are not informed how old Jacob was when Joseph was born; we cannot, therefore, find mentioned in the text of the Scriptures the measure of time between the death of Jacob and the death of Joseph, nor between the death of Joseph and the Exodus. We have two chronological ordinates of great importance which will serve to guide us to determine the epoch of the Exodus, viz. (1) the 400 lunar years of suffering and mourning until the day of deliverance arrived, and (2) the 430 lunar years of the sojourn of the Israelites in the land of Egypt, which it is to be presumed was the account of time from the day of deliverance back to the epoch when Joseph was sold as a slave in Egypt. Nevertheless, as there is something vague in the ordinates alluded to, it will be more prudent first to determine the epoch of the Exodus from other information, and afterwards we shall be able to prove the accuracy of the determination by testing it with the forementioned ordinates. The interval between the Exodus and the Isodus being known, if we can find the date of the Isodus, we shall obtain the rest.

The relation of the events attending the passage of Jordan and the siege of Jericho by the Israelites in the book of Joshua involves the records of the dates of the passage of Jordan, of the time which elapsed from the epoch of the passage of the river to the morning of the last day of the siege of Jericho, and the epoch of its capture and destruction. The date of the last day of the siege is given retrospectively from the commencement of the Annus Magnus, and prospectively



to the Menophrean epoch, in terms of the metric values of the principal hydraulic ordinates of Judæa, as data of public reference for the use of engineers, architects, and cultivators of the soil of a region exposed to droughts and to evils attending volcanic perturbations of a local nature suddenly drying up copious springs irrigating artificially terraced lands and supplying cisterns of populous cities.

On a vertical ordinate let the horizontal line A represent the maximum water-level of the Lake Asphaltites on the Dead Sea, due as well to the sudden accretion of its waters from rains and the melting of snow, as to volcanic action; F the monument at the Ford of Jordan; T the level of the Lake Tiberias, through which Jordan flows in its passage down into the Dead Sea; M the highest tide-level of the Mediterranean Sea in the geographical parallel of Ashdod; P the bottom of the very ancient pool or reservoir of water for the supply of Jerusalem, and which in recent times acquired the appellation of the Pool of Hezekiah; and U the aqueduct of Urtas.

As in the time of Joseph ears of wheat and heads of cattle were interpretable into years of seasons, so in the Book of Joshua the numbers are cubits of the scale with which the conquered lands were meted out among the tribes, viz. agrarian or sacred cubit measures.

It is related in the Book of Joshua, by interpretation, that, in the day chosen for the final assault of Jericho, T M measured the sum of *three* times *twelve* stones, and *three* times *twelve* men, and *ten* days of the month, and *seven* priests multiplied by *seven* trumpets multiplied by *six* circuits of the city of

Jericho ($\overline{3\times12}+\overline{3\times12}+10+\overline{7\times7\times6}=$) 376 agrarian cubits; and that A M measured the sum of *four* times *twelve* stones, and *four* times *twelve* men, and *three* times *ten* days of the month, and *seven* priests multiplied by *seven* trumpets multiplied by *thirteen* circuits the total number of circuits made around the city ($\overline{4\times12}+\overline{4\times12}+\overline{3\times10}+\overline{7\times7\times13}=$ 763) in agrarian cubits. It is also estimated, in the same book, that the measure of time from the opening of the Annus Magnus to the last day of the siege of Jericho, deducted from two thousand agrarian cubits, left a measure which was equal to the hydromasonic ordinate A P in the last day of the siege.

It becomes apparent, after a few trials, that the talismanic number is 48, and that 48 days elapsed from the passage of the river to the epoch of the capture and destruction of the city. The monument at F was hidrymatized 48 agrarian cubits in height above A; and in after times those who planned the aqueduct of Urtas gave it an elevation there of 48 agrarian cubits above P, in commemoration of the key number to the empirical formula of the hydraulic canons of their land.

These are the partial sections of the original Hebrew ordinates in agrarian cubits:—

$$AF=48,\ FT=339,\ TM=376,\ MP=1125{\cdot}3524\dot{6}\dot{6}.$$

For A P, in the epoch on the scale of Sothis periods to which it was historically canonized, measured

$$2000-\left[\frac{MT+MA}{100}+\frac{MF}{3000}+\frac{AF\times\frac{AF}{3}}{4000}=11{\cdot}39+0{\cdot}238\dot{3}\dot{3}+0{\cdot}0192=11{\cdot}6475\dot{3}\dot{3}\right]=1988{\cdot}3524\dot{6}\dot{6}\text{ agrarian cubits.}$$

As $11{\cdot}6475\dot{3}\dot{3}$ Agrarian cubits of time are equal to 4132·9292033 Nile years, the last day of the siege or the beginning of the day of the assault will have been predetermined to fall (4380−4132·9292033=) 247·0707966 Nile years anterior to the Menophrean epoch, and 0·1292033 of a Nile year after the epoch of the Passage of Jordan, which is the Isodus.

The date of the assault, being reduced to the Dionysian scale of the Nativity of Christ, becomes B.C. 1568·695. The morning of the day of assault measured 47 days (of 24 hours) 4 hours

34·35 minutes from the epoch of the Isodus. The city fell into the hands of the Israelites about 20 hours after, and just about sunrise of the following day. Now, according to the formulæ of the Ark, the passage of Jordan dated B.C. 1568·825, and the Exodus took place 40 lunar years anterior to the passage of Jordan, or in B.C. 1607·625.

The standard of the metric system of the Sabeans was the velocity of the geological subsidence of the crust of the earth in 360 mean Tropical or Nile years. The metric value of that standard was mathematically masonified in the dimensions of the King's Stone, deposited in the Ark-chamber of the Suphis pyramid of Memphis. The measurements taken of that stone by J. Greaves, about a couple of centuries ago, being adopted as its most accurate dimensions in English feet, the standard has been computed to have the value of 1·72091 foot (see page 48), and has been denominated the Astro-geological Nile cubit of 360 Noctas or metric Nile years. As the agrarian or sacred cubit was to the Nile cubit in the proportion of 360?: 365·24224 × 360, in mean solar days, the measure of the sacred cubit will be 1·696201 foot; consequently the Hebrew ordinate A P will have measured (2000 − 11·647533) × 1·696201 = 3372·663670 feet,—the subthalassal section M A of that ordinate measuring 1294·208355 feet, and its superthalassal section M P, 2078·455314 feet.

More than thirty-four centuries have elapsed since the above measurements were taken. If in that period of time no gradual change has taken place, we should find the sections M P, M A measuring now what they did in the records. Or we might not find any alteration in M P, but a notable diminution in M A. The diminution of M A would be attributed rather to the filling up of the water-basin of the lake with alluvial deposits, than to any appreciable augmentation in the secular volumes of water discharging into it. On the other hand, if M P were found to be augmented 10 or 15 feet, and M A diminished 10 or 15 feet, geologists would say that the land had risen 10 or 15 feet in a given time. In fact, if we have any faith in the Sabean formulæ, and accord to our forefathers the credit of having moulded in the sacred writings useful knowledge as well as authentic history and the eternal rules of the science of life, the comparison of the existing hydromasonic ordinate with the measures of the one recorded in the Book of Joshua, will enable us to determine how much, in a given historical period, "mountains have been raised or depressed," and, the information obtained on the relations of the present state of things with a past state becoming a good foundation of some reasonable estimate of their future, we should possess, in the language of old, "three parts of the philosophy of the whole world."

The geological season ruling in Judæa is the same as that which is affecting the lower Nile valley, and which is the principal cause of the salubrity of its climate and the fruitfulness of its artificially regulated soil of river deposits. But Sarapidan observatories for geological motions, like the one at present subsisting on the banks of the Nile, no longer exist on the seabord of Judæa, and we consequently possess no accounts of the motions that country has been exposed to as we do of those in Egypt, where they are daily watched and noted in books. They have been kept up in Egypt, because the entire valley would become uninhabitable if human foresight and prudence were to cease to regulate the work done by the river, so as to counteract the evils attending volcanic perturbations. But Palestine and Syria being a rainy country, the same necessity for those observations did not exist, excepting in those parts where the soil was condemned to drought, but which the increasing wealth of the people reclaimed, and where vast cities were formed for commercial purposes.

In A.D. 1855, Mr. Poole ascertained the altitude of the aqueduct of Urtas and the bottom of Hezekiah's pool above a certain Mediterranean level at Jaffa, and the level of the Lake Asphaltites below the same Mediterranean level, with the "anéroïde métallique," in the last decade of October. He observed a line of drift wood on the beach at the northern extremity of the lake, ranging 4 feet above the lake-level, and indicating that the lake rose in that part of it 4 feet. About the same period, an American party of scientific gentlemen observed the difference in level between the Mediterranean and the Lake Asphaltites. The American number was 1312 feet: it was 1 foot 6 inches less than Mr. Poole's subthalassal number.

The two sets of modern observations do not seem to have been connected by the adoption of any particular Mediterranean level as a common basis of reference; and as the Hebrew engineers computed their sections from the maximum lake-level, probably in the parallel of Ashdod, and the maximum tidal level of the Mediterranean in the same parallel, the modern observations can admit of comparison with the Hebrew data only in the view of obtaining a certain approximation to truth. The measure of the maximum tidal amplitude of the Mediterranean in the Port of Alexandria (Racotis) is recorded, in the Heliopolitan Obelisk, a monument dating 1760·3 Nile years prior to the epoch of the Isodus, to measure 3·064 feet; and modern observations in the same port proving that no appreciable alteration has taken place (the highest rise of the sea-level being 0·93 of a French metre above its lowest ebb level), we may infer that the maximum tidal amplitude of the same sea on the coast of Syria has not varied appreciably since the date of the Hebrew records. The magnitudes of the tides on the Syrian coast should not be much more, nor less, than those on the Egyptian coast, the line of coast in the south-east of the Mediterranean being an unbroken curve. On the other hand, the Jordan and occasional lateral tributaries bring into the Lake Asphaltites alluvial matter, which tends to raise the level of the secular volumes of water running into it. Yet whether the partial acceleration of the depression which has generated the basin of the lake and of the districts surrounding it be still going on or not, and how far the ruling geological season of subsidence is modified by acceleration in local depression, caused by the cessation of the process of local upheaval which may have gone on during countless years anterior to the unknown epoch when the local volcanic forces producing the tumefaction of the crust of the earth were extinguished, are questions which require long and careful observations to solve. We may therefore legitimately assume, in the following approximation to the construction of the canon of A.D. 1855, that the thicknesses of periodical deposits of alluvial matter in the bed of the Lake Asphaltites, tend to be equal in measure to the velocities of the geological subsidence of the whole land, and that of the measure of the hydromasonic ordinate A P continues to be equal to what it was in the time of Joshua.

Let the middle line between the maximum and the minimum tidal levels of the Mediterranean have been the common basis of the two sets of modern observations: Mr. Poole's superthalassal section M P will become $\left(2064{\cdot}5 - \frac{3{\cdot}064}{2} = \right)$ 2062·968 feet; and the subthalassal section M A should be the mean of the two subthalassal observations raised to the maximum Mediterranean level, and measure $\left(\frac{1313{\cdot}5+1312+3{\cdot}064}{2} = \right)$ 1314·282 feet. As the limits of error in the superthalassal section are much narrower than those of the subthalassal section of the observations, the former has claim to be adopted for a standard of comparison in a computation having for its object an approximation to the locus of the maximum lake-level. Thus:

	feet.
The Hebrew superthalassal section M P measured 247·070 Nile years anterior to the Menophrean epoch	2078·455
The modern superthalassal section M P measured, after 3423·695 Nile years from the date of the Hebrew canon	2062·968
The measure of the subsidence of the land in 3423·695 Nile years will have amounted to	15·487
But the normal measure of the subsidence during the space of 3423·695 Nile years is, in the proportion of a Nile cubit in 360 Nile years	16·366
Consequently the retardation due to local volcanic action of upheaval located in strata which are subsiding, and existing in A.D. 1855, should be	0·87899
On the other hand, the Hebrew subthalassal section M A, 227·070 Nile years anterior to the Menophrean epoch, measured . . .	1294·208

	feet.
The subthalassal section M A must have been increased by A.D. 1855, by the upper measure of the subsidence	15·48$\dot{7}$
and have measured	1309·695
But the mean of the two modern subthalassal measurements being	1314·282
The maximum level of the lake should have measured	4·586331

above the middle line between the two levels of the lake in the times of the two sets of modern observations, and 1309·695669 feet below the maximum Mediterranean level.

The total ordinate from the maximum of the Lake Asphaltites up to the bottom of the Pool of Hezekiah will have measured 3372·75 feet in A.D. 1855. The same ordinate in B.C. 1569 was made by the Hebrew engineers to be 1988·352$\dot{4}6\dot{6}$ sacred cubits*. The metric value of the sacred cubit of the Anglo-American operations will be 1·69625 English imperial feet; and its 360th equal part, which is the nocta of 360 days, will be equal to 0·00471180$\dot{5}$ of a foot. And as the standard Nile cubit is composed of 360 noctas of 365·24224 days, the Anglo-American Nile cubit will be equal to 1·72091 foot; and its nocta will measure 0·0047804262 of a foot.

Herodotus states that the base (and the altitude) of the fourth pyramid measured 150 Egyptian feet, or 100 Nile cubits. Mr. Perring made the sum of those dimensions in the fourth pyramid 172 English feet. By this reckoning the standard cubit will measure 1·72 in English feet; and the nocta thereof 0·0047778 of a foot. This measure, grounded on historical evidence, will be found to approach with all but mathematical precision the record of the standard of the metric system of the Arions consecrated in the dimensions of the King's Stone deposited in the sanctuary of the first pyramid.

The standard Nile cubit is the cube root of the sum of the forty-eighth equal part of the solid generated by the three exterior dimensions of the Stone, and the twelfth equal part of the cubic content of its hollow. Adopting the British astro-

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* See page 43.

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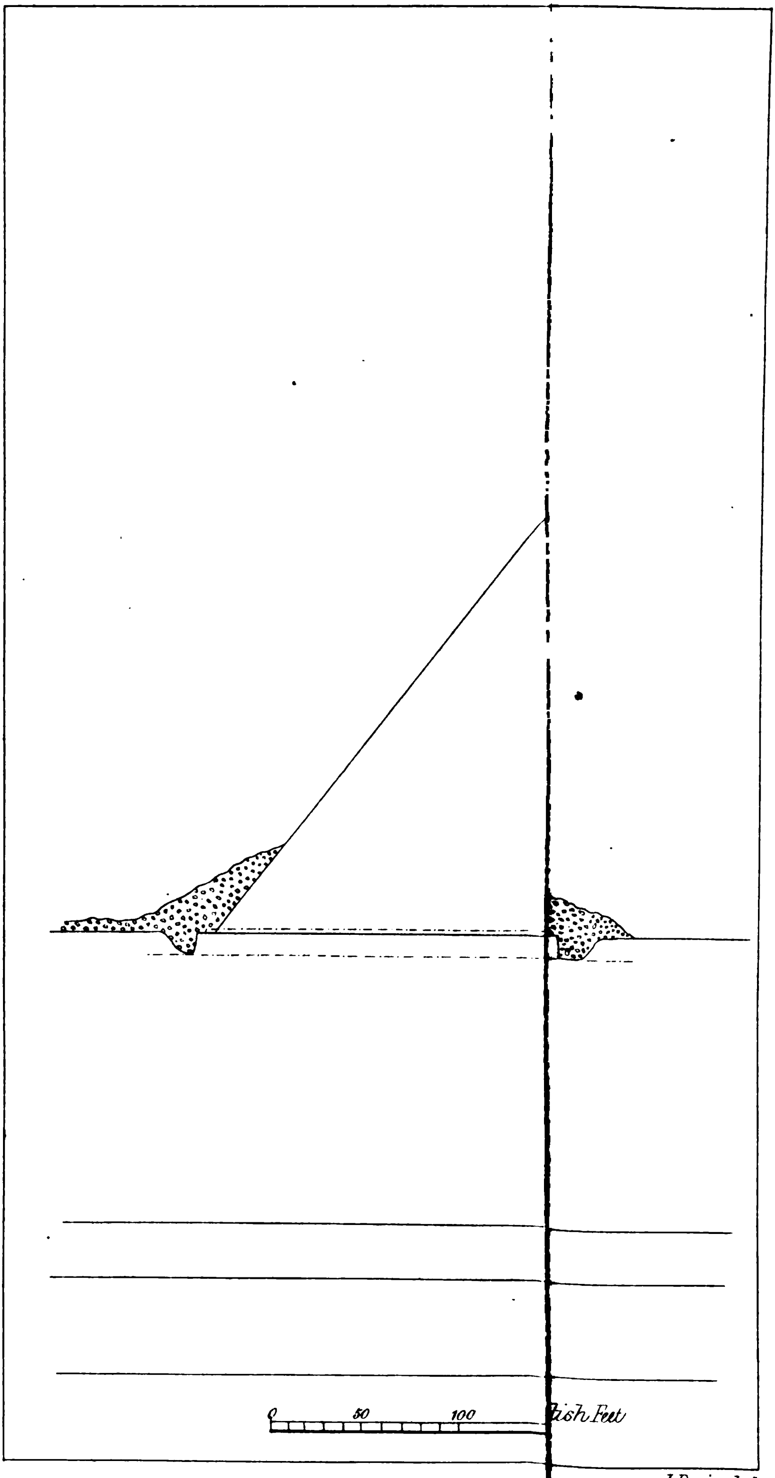


J. Basire lith.

nomer Mr. J. Greaves's dimensions of the Royal Stone, commonly designated "Sarcophagus," as the most scrupulously accurate, we shall have $\sqrt[3]{\frac{7{\cdot}2916 \times 3{\cdot}3125^2}{48} + \frac{6{\cdot}488 \times 2{\cdot}86 \times 2{\cdot}218}{12}} =$ 1·72091 English foot for the length of the standard Nile cubit, and $0{\cdot}004780305\dot{5}$ of a foot for its nocta. This is the cubit of the *first measure.*

The first pyramid masonifies geographical and geodesical records of great historical value; and as they are all expressed in terms of the standard cubit, and some of the principal lines of that great edifice have been measured very carefully by Mr. Perring, and their original masonic values are known, we will investigate some of those formulæ, mainly with the object of procuring the dimensions of the Metric Unit, in order to assign values as correct as possible to the original Hebrew ordinates and ascertain the date of the Isodus. For let it be remembered that in the Arionic science the great political acts of nations are written in the pages of the book of nature, most of the greatest of human events having been made to occur in times previously appointed.

At the time the pyramid was hidrymatized the great masonic ordinate S G was equal to 152766 standard noctas; S A = 149426 noctas; S T = 142746 n.; S K = 77426 n.; S B = 48626 n.; S C = 27026 n.; S D = 24606 n.; S M = 15840 n; and S E = 10425 n. The numbers recorded in the King's chamber and in its antechamber are (1) the cosmical number $5 = \pi$; (2) the number of the Three Triads "dedicated to the gods"—the "principle of all things," $3^2 = \gamma^2$; (3) half the talismanic number of the monument (400) $200 = \tau$; and (4) the sacred or scientific number $360 = \mu$. In the vertical measurements, $S D - S M = 24{\cdot}35$ cubits $= \lambda$; and $S M = 44$ cubits $= N$; and $S M - S E = 15$ cubits 1 dactyle $= A$; $S B - S C = 60$ cubits $= \phi$; and $S G = 400$ cubits of the equatorial circumference of the earth, $= \lambda + 2\tau$ in cubits, at the epoch of hidrymatization; at the same epoch S D = 68 cubits 8 dactyles 6 noctas.

Let $\Sigma = 808$ noctas, the Manethonian altitude of Suphis I. above the 60th Nile year of the Annus Magnus; and $\omega =$

778·944, the altitude of Soris; and $\epsilon=11$, the Nephercherian number. And let η be the number of the chambers: then—

1. $\dfrac{\frac{\epsilon}{4}+2\tau}{\eta}=50''{\cdot}3431$ is the record of the measure of the annual recession of the equinoxes.

2. $\frac{\epsilon}{2}$ in hours, $+\frac{\tau}{\epsilon}$ in minutes, $+\frac{2\tau}{\epsilon}$ in seconds, is the excess in time over and above the 365 days in the mean tropical year.

3. By substituting $\frac{2\tau+\lambda}{\epsilon}$ for the second term in the above masonic formula, the sum will be the excess in time over 365 days in a sidereal year.

4. $\left(\text{N}^\circ+\frac{\phi^\circ}{\mu}\right)-\text{A}^\circ=29^\circ\ 57'\ 30''$, the latitude of the hypogæum north of the equator at the epoch of its hidrymatization.

5. At the epoch of the hidrymatization of the hypogæum the Ezekelian chariot had to roll $\left(2\text{N}^\circ+\frac{\phi^\circ}{\mu}\right)-\text{A}^\circ=73^\circ\ 57'\ 30''$ south of the latitude of the hypogæum, and then to roll sideways $\left(\phi^\circ-\frac{\pi'}{2}\right)-\frac{\phi^\circ+\pi^\circ}{2},=27^\circ\ 27'\ 30''$, to obtain a station in the southern hemisphere which was antipodal to one of the Harans of nature near the Shafra in the northern hemisphere.

6. The length of the side of the square platform cut in the nummulitic rock on which the first course of the masonry of the edifice was laid contains the sum of $\mu\overline{2\tau+\lambda}$, and $\gamma^2\overline{\Sigma-\lambda}$ $=\text{S G}+\gamma^2\,\overline{\Sigma-\lambda}=152766+7052{\cdot}85=159818{\cdot}85$ noctas (= 764 English feet by Perring's measurement).

7. The length of the side of the first course of masonry is less than the length of the rock platform by $\pi\left(\omega-\frac{\lambda}{2}\right)-\text{S D}$, and measures 156053·35277 noctas (=746 English feet by Perring's measurement).

8. The equatorial diameter was made to the polar axis as

$$\sqrt{\frac{3}{5}\left\{159818{\cdot}85-2\pi\overline{\omega-\frac{\lambda}{2}}-\text{S D}\right.}\ :\ 301{\cdot}2.$$

9. As the degree contained 400000 spithamæ (=3000 plethrons=100 geodesic stadia), the equatorial diameter will have

been estimated by the Egyptian mathematicians previous to the epoch of Soris at $\frac{360^\circ \times 500\,\mu(2r+\lambda)}{3{\cdot}14} = 8752847053{\cdot}3$ noctas; and the polar axis at 8723890885·9 noctas.

The sum of the two diameters according to modern determinations of the figure and dimensions of the earth amounting to 83548118 English feet, the measure of the nocta based

on that amount will be	0·0047805327	Eng. ft.
And on that of Perring's measure of the rock platform	0·0047804123	"
On that of the first course of masonry	0·0047804162	"
On that of the Anglo-American ordinate in Palestine	0·0047804262	"
As eliminated from the Royal Stone Standard from Greaves's dimensions	0·0047803055	"

Perhaps the mean of these five values of the nocta, viz. 0·0047804186, making the standard cubit 1·720950696 English foot, will be the nearest approximation to truth, it being probable that Greaves's exterior depth of the Stone was made a little less than its real measure. We will nevertheless prefer to retain the value obtained directly from the King's Stone in our computations, as being derived from an instrument which was designed by its constructors to impart the metric value of the standard with mathematical accuracy.

Having provided ourselves with that which is most necessary to enable us to establish a comparison between the ordinates of the Hebrew and of the Anglo-American engineers, the following relations will be found to subsist between the upper and lower thalassal sections of the two epochs:—

	English feet.	English feet.	
Hebrew ordinate	M P = 2078·455 +	M A = 1294·208	in B.C. 1569.
Anglo-American	M P = 2062·877 +	M A = 1309·786	in A.D. 1855.
Subsidence =	15·578	15·578	

Mr. Poole's measure of M P = 2062·968, and of M A = 1309·782. The modern superthalassal measure may be about an inch greater than it should be. These computations are not based on accurate data of the operations with the "anéroïde," nor can our conjectures on the maximum secular flood-level of the lake be of any value further than to give some approximate result. In consulting the written monument, we have first determined its age to be in B.C. 1569, and that the ordinates M P, M A in that epoch were accurately recorded. As A P must remain constant, our imperfect data in consulting have given the measure of 15·578 feet of subsidence in 3424 Nile years. But 3424 years of subsidence with the mean velocity of geological subsidence should have made the difference between the ancient and modern ordinates about 16·367 feet. The account shows retardation to the amount of 150 noctas. The retardation in Egypt is 172 noctas. A manifest inference may be drawn from the astrogeological history of the land, by the use the monumental writings were intended to be put to,—that Jerusalem existed in the time of Joshua; that the reservoir for the supply of water to its inhabitants existed, and was named in after-times the Pool of Hezekiah because Hezekiah may have repaired or enlarged it; and that when it was first constructed its sea and land levels had been known. The children of Israel tarried on the eastern side of Jordan and deferred the siege of Jericho until the retrospective measure of the epoch to the commencement of the Annus Magnus, added to the *known* measure of the altitude of the Pool of Jerusalem above the flood-level of the lake, should make up exactly 2000 cubits of the sacred measure. Such favourable conjunctures happened very rarely, and when they did occur they were not neglected.

One of the most important of the graphic monuments of a Siriadic nature in the books of Moses is the Ark of Testimony.

The Sabeans derived their title from the number seven (sebaa), because in the Annus Magnus of 1095 quadrienniums, amounting to 1599823 entire days, there were 8 quadrienniums (the 121st, 243rd, 365th, 486th, 608th, 730th, 851st and 973rd) which had 6 hemeræ epagomenæ to each of the sacred years of 360 days thereof, and the last quadriennium had 6 hemeræ epagomenæ to the three first years thereof, and 7 hemeræ epagomenæ to the last year thereof. Hence the number 7 became dedicated to Sirius, which star on that account was denominated Phthah (Hepta), and was reverenced as a sacred number, and adopted by the priesthood in drawing up many of their scientific formulas. We find an interesting example of its use in the formulas masonified in the Ark of the Covenant.

The prophet and lawgiver and liberator of his nation from the severe bondage of the Egyptians has masonified two classes of records in his description of the Ark of the Covenant and the testimonials it was destined to contain. The first class of records comprehends the prospective and the retrospective measures of the epochs of the opening and the close of the great Tropical hemicycle, and of the historical epoch of of the Consecration of the Ark, in Nile years, from the Medius Ævorum; and the second class is devoted to the indications of the measures of the Sidereal year, of the maximum and the minimum of Tropical years, and of the Tropical year of the Consecration of the Ark.

The Ark was a portable quadrangular chest of acacia wood, lined interiorly and exteriorly with plates of pure gold. It was four English feet and two inches (4 feet 2·078 inches) in length; and its breadth and height were each three-fifths of its length in measure. The principal objects reposited in it were the rod of Aaron, the golden bowl containing manna, and two stone tablets on which were graved the ten commandments. The rod was the standard Agrarian or Sacred cubit, measuring one foot eight inches and about thirty-five hundredths of an inch (=1·6962 foot) in length: it was probably a cylindrical stick in ebony, and resembled the Black Cubit used in our diurnal Nile observations. The bowl was probably a hemisphere of two handbreadths of the Nile cubit in interior diameter (=to about 0·57364 of a foot); it was a medicine-cup, and constituted the unit for measures of capacity. But the stone tablets may be conjectured to have been of the same material as that of the King's Stone standard of the universal metric system deposited in the Ark chamber of the Suphis pyramid, *i. e.* a compact close-grained sinaïte of a dark grey colour: they formed the standard of weights. The Ark also contained an authentic copy of the Hermetic books in which were concentrated the essence of all useful knowledge acquired by mankind in many periods of civilization, and preserved by the care of the priesthood for the benefit of futurity, and certain objects of antiquarian value in the history of the Hebrews, and probably documents concerning their political relations and obligations towards other nations. The *Ark*, in virtue of its dimensions and the nature and the number of its contents, was constituted a treasury of science, and an authentic chronological and historical symbol of the Supreme Being, inasmuch as it epitomized the knowledge acquired and preserved by man of the laws of the Creator of the Universe, in the epoch of *its* construction. The place in which it rested was conventionally held to be the centre of the world, towards which the Hebrews had to turn their faces in their devotional repetitions wherever they happened to be, in order to promote among them a certain knowledge of geography, which is necessary in commercial intercourse, the foundation of civilization.

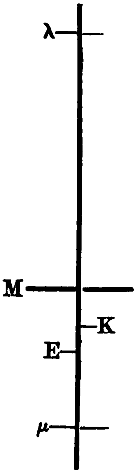
The numbers employed in the formulas of the Ark are, the Sabean number Seven, the sacred number Three hundred and sixty (θ), and the Sothoïcal number One thousand four hundred and sixty (ϕ), and those which are stated in vv. 10 and 12 of Chapter XXV. of the Book of Exodus:—"And they shall make an Ark of Shittim wood: two cubits and a half shall be the length thereof, and a cubit and a half the breadth thereof, and a cubit and a half the height thereof. . . . And thou shalt cast four rings of gold for it, and put them in the four corners thereof; and two rings shall be in the one side of it, and two rings in the other side of it." The cubits of the Ark were of the lunar scale. As the standard Nile cubit measures 1·72091 in English feet, the measure of the cubit of the lunar scale will be—

$$\frac{1{\cdot}72091 \times 354 \times 360}{365{\cdot}24224 \times 360} = 1{\cdot}66793\,\frac{1314229248}{1314872064} \text{ foot.}$$

Let $l = 2{\cdot}5$, $a = 1{\cdot}5$, $\beta = 2$, $\gamma = 3$, $\delta = 4$ and $10 = x$ and the powers of x up to its fifth power.

For the liberation of the numeral values of the records latent in the first class, a talismanic number, G, is used. It is the seventh part of the sum of seven cubic lunar dactyles in the solid generated by the three dimensions of the Ark, converted into a whole number of cubic dactyles of the solar scale.

The masonic rule for the reduction of a mixed number into an entire number, is to add unity to the whole number when its fractional part exceeds a half. Thus the formula $\frac{(24^3\,l\,a^2)+7}{7}=\frac{77767}{7}=11109{\cdot}57$ lunar $=10776{\cdot}28$ solar dactyles gives two talismanic numbers, $11110=A$, $10776=G$.



Project a column of time into an indefinite number of Sothis periods, and vivificate it by assigning to one of the Sothoïc graduations the value of the Medius Ævorum M. Let λ mark the epoch of the minimum Tropical year, and μ that of the maximum Tropical year of the great Tropical hemicycle $\mu\,\lambda$. Let also the graduation at K be the historical epoch of the consecration of the Ark, and E the historical epoch of the Exodus, the event in K having occurred in "the first day of the first month of the second year" of seasons after E. The following will be the masonified records of the first class, in Nile years, viz., the measure of the Tropical hemicycle $\mu\,\lambda$, the antemenophrean date of the epoch of the consecration of the Ark K and the antemenophrean date of the maximum Tropical year μ :—

$$\mu\ \lambda=G-7\,\beta\,x \qquad =10636 \text{ Nile years.}$$

$$M\,K=\frac{G-(7\,\phi-7\,\beta)}{\beta} \qquad = \quad 285 \quad ,,$$

$$M\ \mu=M\,K+\delta\,\theta+7\,\gamma= \ 1746 \quad ,,$$

∴ M λ=8890 Nile years, M E=286 Nile years, and E μ $=\phi=1460$ Nile years.

The records of the second class are divisible into two sections, viz., of the lengths of the Tropical years in the epochs μ, K, and λ, and of the length of the Sidereal year.

In the formulæ of the first section the talismanic number employed is the square root of the area in square cubits of one of the longer sides of the Ark, diminished by a square cubit. Thus :—

$$\sqrt{(l+a^2)-1}=2{\cdot}738612787525835064=D.$$

The numbers being days, the length of the maximum Tropical year, μ, will be

$$\frac{\frac{D}{x}+x^2\,\delta\,D}{\gamma}+\frac{\gamma}{x^3}=\frac{0^d\cdot2738612+1095^d\cdot445115}{3}+0^d\cdot303$$
$$=365^d\ 5^h\ 49'\ 26''\cdot7135160+,$$

and the length of the minimum Tropical year in λ

$$\frac{\frac{D}{x}+x^2\,\delta\,D}{\gamma}+\frac{D-\frac{l}{\delta}}{x^3}=\frac{0^d\cdot2738612+1095^d\cdot445115}{3}+0^d\cdot0021136$$
$$=365^d\ 5^h\ 48'\ 9''\cdot1332609+;$$

but the length of the Tropical year in K will be

$$\frac{\frac{D}{x}+x^2\,\delta\,D}{\gamma}+\frac{D-\frac{a}{\delta}}{x^3}+\frac{\theta''}{\beta\delta}=\frac{0^d\cdot2738612+1095^d\cdot445115+}{3}$$
$$+0^d\cdot0023636+0^d\cdot000520+,$$
$$=365^d\ 5^h\ 49'\,15''\cdot7332607+.$$

In the formula of the second section three talismanic numbers are employed, viz., the numerical value of cubic lunar dactyles A of the talismanic number G, the talismanic number D, and the square root of the sum of the squares of the length and height of the Ark: thus,

$$\sqrt{l^2+a^2}=2\cdot915475947422650235+=D'.$$

The numbers being days, the length of the Sidereal year will be the third part of $\frac{A}{x^5}+D'+[x^2\,\delta\,D]$

$$=0^d\cdot3239093+1095^d\cdot445115=1095^d\cdot7690243.$$
$$\therefore\ 365^d\ 6^h\ 9'\ 7''\cdot9023770+=1\ \text{Sidereal year}.$$

The comparison of the Sidereal year recorded in the formula of the Dial of Ahaz with this of the Ark, shows that the latter would retard, in 3 × 7000 revolutions, 23 hours 46 minutes and 50·7306 seconds, or about a whole day behind the former. But these things properly belong to the astronomer and the mathematician. They have been brought forward in this little résumé on account of the light they may throw on the chronological system of the Hebrews, and dissipate the obscurity which pervades their accounts of historical time. It would appear that, in the growing strata of Hebrew history, the most important and instructive layers have been connected together by a certain dyke, rich with the ores of the most precious sciences derived from the profound depths of antehistorical times, and made to ramify through them by able hands, in order to preserve them in their natural order of superposition, and to seal them, in different propitious stages of the course of time, with the talismanic signet of authority. Other instructive data masonified in the relation of the Ark of Testimony with the Mercy Seat are of a geological nature, and are considered in the researches into the physical constitution of the Nile valley.

The space of time from the birth of Abram to the Exodus being 672·305 Nile years, its principal sectional details, satisfying all the chronological conditions required by the text of the Scripture accounts, are exhibited in the following Table:—

	Nile years.	
B.C.	1321·625	The Menophrean epoch (M).
	1568·825	The Isodus.
	1606·282	The consecration of the Ark of Testimony.
	1607·625	The Exodus.
	1685·225	The birth of Moses.
	1935·925	The death of Joseph.
	1977·720	The death of Jacob.
	1994·720	Jacob's audience of Pharaoh.
	1995·625	The Israelites settle in the land of Goshen.
	1996·115	The arrival of Benjamin in Egypt.
	1998·115	The commencement of the 7 years of famine.
	2005·115	The commencement of the 7 years of plenteousness.
	2013·525	The date of the ministry of Joseph.
	2015·525	The execution of Pharaoh's baker.
	2015·725	The imprisonment of Joseph.
	2024·725	The arrival of Joseph in Egypt as a slave.
	2026·135	Joseph feeds his father's flocks.
	2042·625	The birth of Joseph. $M-[237+233+237+(2\times 7)]=M-(103\times 7)=$ B.C. 2042·625.
	2061·625	Jacob enters Laban's service.
	2110·385	The death of Abraham.
	2124·720	The birth of Jacob.
	2147·245	The death of Sarah.
	2149·185	The death of Thera.

Nile years.	
B.C. 2150·005	The date of the covenant at the well of the *seven*. $M - \overline{7 \times 122}$ lunar years.
2156·795	The date of the altar on Mount Gerizim, or on Mount Moriah.
2175·920	Isaac is weaned.
2182·920	The birth of Isaac.
2183·670	The conception of Sarah.
2183·920	The covenant with Abram. The date of the change of name.
2196·715	The birth of Ishmael.
2197·465	The conception of Hagar.
2204·185	Date of the Chronological Revelation.
2205·365	Abram dwells in the land of Canaan.
2206·610	Abram departs from Haran, being 73·525 Nile years of age.
2269·730	The birth of Sarai.
2275·215	Abram's departure from Ur.
2280·135	The birth of Abram.

The date of the consecration of the Ark of Testimony in the scale of Sothis periods has been masonically determined from the dimensions of the Ark.

The epoch of the Exodus has been obtained from the chronological indications and other evidences in the Old and New Testaments, confirmed by the statement of Manetho pointing to the time of that event, and from the chronographical schemes of Josephus and Theophilus, to whom the date of that event was well known, and from some of those national eras in the formation of which it forms an important element. It has also been confirmed by the hydraulic ordinates of Judæa.

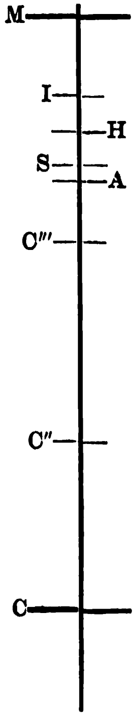
Jacob arrived in the land of Goshen, with 70 souls of his family, 400 lunar years prior to the Exodus.

Joseph was sold in Egypt, to the captain of the guard of the king of Egypt, 430 lunar years before the Exodus.

The date of the birth of Joseph is given in the Book of the Exodus, in Chapter VI. vv. 16, 18, 20. The addition of the Sabean number 2 × 7 to the sum of the ages of Gershon, Kohath, and Merari, in Nile years, is the retrospective measure of time from M to the birth of Joseph.

The age of Abram when the chronological revelation was made to him in Mamre has been obtained through an interpretation of the sense of the 42 generations of the first Evangelist. The number 42 has also the property of converting 42 generations of three to a century of lunar years into Nile years, by being subtracted from 1400. This formula resembles the old one mentioned by Herodotus, the Egyptian number of 11340 lunar years being convertible into Nile years by taking away from it 340. The date of the birth of Abram in the scale of the Sothis periods is given in the Patriarchal chronologies of the three versions.

The dates of the birth of Sarai, of Abram's departure from Haran, and of the birth of Isaac do not appear to have been indicated in the existing versions of the Book of Genesis as they must have been in the original. I apprehend the Sabean numbers will have been such as follow:—On a column of time set off an Annus Magnus of three Sothis periods C C'', C'' C''', C''' M. In the uppermost period C''' M, point the graduations A for the birth of Abram, S the birth of Sarai, H the departure from Haran, and I the birth of Isaac. The locus of A in the Sothis period being historically given, the birth of Isaac will have been *predetermined* to occur when $\sqrt{\mathrm{A\,I}}$ would be $= \sqrt[3]{\mathrm{A\,M}}$, and the *auspicious moment* for the departure from Haran will have arrived when $\sqrt{\mathrm{S\,H}}$ would have been $= \sqrt[3]{\mathrm{A\,C'''}}$. It follows that the epoch of the event S will also have been predetermined in the scale of Sothis periods. The complementary record in the Sabean formula will be $4.\overline{\mathrm{I\,M}} + \mathrm{H\,A} = \mathrm{M\,C} = 4380$ Nile years. This important number of 4380 is masonified in the relation in Chapter II. of the third Evangelist. To obtain it, we are directed to multiply by 12 the sum of 354 days, the week of the feast of the passover, and the day's journey, and the three days after until Jesus was found. Thus:—
$12 \times \overline{354 + 7 + 1 + 3} = 4380$.



In the Manethonian dynastic lists, the seventh and the eleventh of his dynastic sections have been valued at 70·8 days, and 60·225 Nile years, in order to realize the Manethonian sums in the end of his two first books, and data connected with the Xoïte period of Sothis and the date of the Heliopolitan Obelisk. Those two dynastic sections are to the lists of Nile observations what the second Caïnan is to the Patriarchal columns of the three versions. They are susceptible of variation in value.

A résumé of the leading points in historical chronology in current Nile years is offered in the following table:—

263 ☥ Philip III. of Spain (Pius).
976 Era of the Hejira.
338 Era of Diocletian.
146 ☥ Antoninus Pius.
138 † Epoch of the Nativity of Christ.
747 Epoch of Nabonasar.
6 Era of Rome.
8
1 = 11th year of the reign of Jotham.
15 Era of the Olympiads.
545 ☥ Epoch of Menophres or Menes and Phthah.
286 Epoch of the Exodus.
597 Epoch of the Chronological Revelation.
76 Epoch of the birth of Abram.
501 ☥ The epoch of the Xoïte period of Sothis.
1460 ☥ Epoch of Mencheres II., Pius.
1410 Era of Menes.
50 ☥ Epoch of the Menaïc period of Sothis.

The detail of the sections of time between the epochs of the ministry of Joseph and of the audience of his father:—

	Solar years.		
B.C.	1994·93	. .	The audience.
	1995·6	=0·695	Settlement in Goshen.
B.C.	1996·1	=0·49	Arrival of Joseph's brothers in Egypt to buy corn.
	1998·1	=2·	Two years of famine.
	2005·1	=7·	Seven years of extraordinary abundance.
	2012·1	=7·	Joseph's ministry.

The 430 years of the sojourn of the children of Israel in the land of Egypt are lunar years, and are computed from the time Joseph was sold to the Egyptians. But the 400 lunar years of suffering and bondage dated from the time Jacob arrived in Egypt with his family. The above ordinates reveal a fact designedly omitted in the Book of Genesis, that the interval between the time when Joseph became Pharaoh's minister and the commencement of the seven years of abundant crops was seven years. This section, being introduced into its proper place, makes it necessary that the interval between the close of the seven years of abundance and the time when Joseph's brothers came to Egypt to buy corn should be two years, and the time taken from their departure from Egypt until their return with their father and household about half a year,—more than fourteen months being spent from the time Joseph gave his message to his brethren to go and invite his father to come to him into the land of Egypt and the memorable epoch of the audience. The patriarch will have been nearly eighty-four years of age when Joseph was born. Joseph died about forty-three years and five months after his father.

The third section of Hebrew chronology is the space of time between the epoch of the Exodus and the laying of the first stone of the great Siriadic monument in Jerusalem by king Solomon. It measured 600 Nile years, as is recorded in the number affixed to the name of Shamgar, a hero who acted during the administration of Ehud the same part as Samson did afterwards during the administration of Eli. Omitting from this space its upper extremity (from the beginning of the reign of David to the foundation of Solomon's Temple), the remainder is divisible into three sections: (1) from the Isodus to the commencement of the Mesopotamian servitude; (2) from the Mesopotamian servitude to the close of the administration of Eli; (3) from the administration of Eli to the beginning of the reign of David. The first section is composed of two periods, viz. that of Joshua, or the destruction of the seven nations and the distribution of their lands by lot, and the period of the Elders. The third section is also composed of two periods, viz. the administration of Samuel, and the monarchy of Saul. In the Old Testament the chronologies of these four periods have been designedly omitted; but the chronology of the central section has been carefully recorded in a connected series of years. The chronological statement of the apostle Paul in the New Testament (a man of the same school as those who had written the old accounts), coming to our aid, points out, by its studied ambiguity, that there is yet one thing to be discovered and applied, in order to solve the historical problem of a Siriadic edifice constructed by different hands and in epochs separated from each other by great intervals of time. For the Apostle, having stated the duration of the monarchy of Saul, still leaves us in the dark as to the precise graduation on the column of years from which his ordinate of about 450 (lunar) years is to be raised or demitted. In other words, having found the difference between 450 lunar years and the value in time of the central section, we require a light to direct us to discover in what proportion the excess is to be distributed between the upper and lower sections, and how, one of the periods of the lower section being determined, the value of the other (the period of Joshua) will necessarily be given. The discovery that the Hebrew Akals appointed the ever-memorable night the shades of which were to be dissipated by the glorious sun of the initial day of the new Annus Magnus, and of the fifth of their years of Jubilee, for the blow to be struck by Gideon, the man of their choice, to liberate their countrymen from the bondage of their Midianite oppressors, will solve the problem.

A careful perusal of the incidents and the phenomenal episode preceding the panic which destroyed the camp of the Midianites reveals the fact that the great event occurred in the night of the summer solstice indicated by the epoch of the year of seasons when the dews commence to be condensed on the woollen coverings of those who sleep out in the open air—a night dedicated to festivity, music, and illuminations, because it is the commencement of a new river which is to give health and food to millions of human beings in the Nile valley and elsewhere. The masonic device is in lunar years. The first record is of a technical nature, establishing relations between lunar and solar years. For the first correction left 10,000 men (lunar years) in Gideon's camp. By a second operation, 300 men being deducted, the 9700 men who were dismissed expressed in solar years the value of 10,000 lunar years. The mind being forewarned that the ensuing computation, fixing the date of the event on the scale of Sothis periods, is in lunar years, multiply the sum of the sword of the Lord, the sword of Gideon, the individuality of Gideon himself, the trumpet, and the act of blowing the trumpet (=5) added to the product of the 300 men who "lapped" multiplied by the same number (5), by the number of the parties (3); and add to the product the individuality of Phurah, the servant of Gideon, who is to be considered not quite half a man in the transaction; and we obtain 4515 lunar years and not quite half a lunar year, or three Sothoïc periods, for the retrospective date of the event to the zero of the scale of Niloscopic time.

Let $L=450$, a number obtained by the sum of the men who lapped and the reflections of the halves of their bodies in the water they bent over to lap from $\left(=300+\frac{300}{2}\right)$; and $M=128=4\times\frac{3200}{100}$, the four hundredths of the total number of men assembled in the camp of Gideon in the first instance; and $\nu=3$, the number of Sothoïc periods in an Annus Magnus. Then $\frac{L+M}{2}-\nu=286$ will be the retrospective measure of the event of the liberation from the epoch of the Exodus in Nile years; and $\frac{L+M}{2}+2\nu=295$, the same measure in lunar years.

Keeping in mind that the measure of time from the Exodus to the foundation of the Temple of Solomon is 600 tropical years, and casting up the account of time in the post-Menophrean section, from the commencement of the administration of Gideon up to the close of the third year of the reign of Solomon, we obtain 23·587 lunar years for the duration of the ministry of Samuel. We now find that the Apostle demitted the measure of about 450 lunar years from the close of the administration of Eli down to the establishment of Elders. Consequently the section of Joshua will measure 21·969 lunar years.

Of the men of the ninety-eighth generation, computed from the opening of the Sothis period marked in the Hebrew scheme of the Patriarchal chronologies (the epoch of the Exodus closing the ninety-seventh generation), none had been left alive by the epoch of the Isodus, except Joshua and Caleb. At the epoch of the Exodus, Moses was eighty, Joshua 48·031, and Caleb thirty-eight lunar years of age. In the twentieth day of the second month of the first year of the Exodus the Israelites departed from the desert of Sinai, and after a journey of three days arrived at Kibroth-hataavah, where they dwelt forty days. At the next station, Hazeroth, they tarried not less than seven days. Departing from Hazeroth, they arrived, in nineteen stations, at Kadesh-barnea in the first month of the third year of the Exodus. Soon after their arrival in Kadesh, Caleb, one of the commission sent to report on the lands destined to fall into the possession of the Israelites, was forty years of age. The tribes dwelt in Kadesh 18·7 years. The conquest of the territories on the left bank of the Jordan occupied them 19·3 years until they crossed Jordan. Thus from the time of Jephthah back to the period when the Israelites, quitting Kadesh, commenced to conquer and to occupy, by cultivating, the lands in Heshbon, in Aroer, and the coasts of Arnon, the space measured 380·269 lunar years. When Jephthah informed the king of Ammon that his countrymen had been in possession of the lands to the east of Jordan 300 years of seasons, he deducted from the account of time the five periods of bondage which the Israelites had undergone, and which altogether amounted to seventy-one lunar years. The sacred historian, by means of this masonic scheme, not only confirmed the aggregate duration of the periods of slavery prior to Jephthah, but also affirmed that when nations lose their political freedom, they lose the free use of body and mind, as well as all property in land. It is not stated that the Israelites had been in possession of those lands three centuries ago, but that they had possessed them for three centuries.

The date of the Exodus has been masonified by Josephus and Theophilus in the variations they have introduced into the ante-Menophrean section of Manetho's second Diospolitan Dynasty. They have sacrificed the real historical numbers in order to adapt them in their several schemes to record the date of the same event before the Medius Ævorum. The Flavian formula contains one more name, of great value, than the Theophilian, as will be seen from the following comparative Table of the same section:—

The Masonic Scheme of F. Josephus.			The Masonic Scheme of Theophilus.			Geochronological and Monumental Section of Manetho.		The Political Section.	
18. Sethosis, who is Ramesses.			Sethus and Rhamesses.			Sethos. B.C. 1322.		Ramses	51
	Nile yrs.	m.		Nile yrs.	m.		Nile yrs.	Sethos.	Nile yrs.
17. Amenophis	*19	0	Amenophis	19	6	Amenophath	19		+20
16. Armesses-miamou	*66	0	Sethos (1 3)	1	0	Ramesses	1		
15. Ramesses	1	4	Armæus	4	2	——	—		
14. Armaïs (4 7)	4	1	Sethos-miammu	6	0	Armeses	5	Armeses	5
13. Akencheres	12	3	——	—		Acherrhes	12	Acherrhes	12
12. Akencheres	12	5	Chencheres	30	1	Chebres	12	Chebres	12
11. Rathosis	9	0	Athoris	12	3	Rathos	6	Rathos	6
10. Akenchres	12	1	(A queen)	10	3	Acherrhes	32	Acherrhes	32
9. Horus (36 7)	36	5	Orus	35	5	Horus	37	Horus	37
8. Amenophis	30	10	Dam-phenophis	30	10	Amenophis	31	Tothmes, r.	40
7. Thmosis (Tothmes II.)	9	8	Tuthmosis	9	8	Tuthmosis	9		
6. Mephramouthosis	25	10	Methrammuthosis	20	10	Misphragmathosis	26	Misaphris, r.	39
5. Mephres	12	9	Mephres	12	9	Misaphris	13		
4. Amessis	21	9	Amesse (21 9)	21	1	Amersis	22	Amersis, r.	22
3. Amenophis	20	7	Amenophis	20	7	Amenophthis	24	Chebros	24
2. Chebron	13	0	Chebron *	13	0	Chebros	13	Amos, r.	37
1. Tethmosis (Tothmes I.)	25	4	Amasis *	25	4	Amos * (24)	—		
Sum.	333	0		273	8				
−66−19=	−47	0	+25 4−13=	+12	4				
Date of Exodus	286	0		286	0	B.C. 1708	286		286

The scheme of Josephus consisted in procuring 10 generations of solar years, and in assigning to the two uppermost names two numbers such that their difference deducted from 10 generations should leave the measure of the Exodus before the Menophrean epoch. The 6 months added to the uppermost number belong to Armaïs, the Armeses of the geological lists, who reigned more than 4 years and 6 months; and the 2 months added to Ramesses-Miamou belong to Horus, who reigned more than 36 years and 6 months. These translations of fractional numbers have been made by some prudent monk to prevent the discovery of the object of the scheme.

But the Theophilian scheme is the counterpart of the Flavian; for here the sum of the numbers is made to require the addition of the difference between the two lowermost numbers, to leave the measure of the Exodus before the Menophrean epoch.

The number given by Clemens for the date of the Exodus anterior to the Menophrean epoch is 345 years. The properties of the digits, taken separately, are well known. But it has no intelligible relation either to the Exodus or to any event previous to it. It is probable that the Alexandrian's original number was correct, but that some epitomist designedly altered it. Great care has been taken to keep the Sothis scale from the knowledge of mankind. I fear the motive has not been disinterested, it having been probably apprehended that influence grounded on mystery would be undermined if the truth were known.

The following is the Table of the third section of Hebrew chronology:—

The Masonic Scheme of F. Josephus.			The Masonic Scheme of Theophilus.			Geochronological and Monumental Section of Manetho.		The Political Section.	
18. Sethosis, who is Ramesses.			Sethus and Rhamesses.			Sethos. B.C. 1322.		Ramses	51
								Sethos.	
	Nile yrs.	m.		Nile yrs.	m.		Nile yrs.		Nile yrs.
17. Amenophis	*19	0	Amenophis	19	6	Amenophath	19		+20
16. Armesses-miamou	*66	0	Sethos ....(1 3)	1	0	Ramesses	1		
15. Ramesses	1	4	Armæus	4	2	————	—		
14. Armaïs .... (4 7)	4	1	Sethos-miammu	6	0	Armeses	5	Armeses	5
13. Akencheres	12	3	————......	——		Acherrhes............	12	Acherrhes ..	12
12. Akencheres	12	5	Chencheres..........	30	1	Chebres..............	12	Chebres	12
11. Rathosis	9	0	Athoris	12	3	Rathos	6	Rathos	6
10. Akenchres	12	1	(A queen)	10	3	Acherrhes............	32	Acherrhes ..	32
9. Horus ....(36 7)	36	5	Orus................	35	5	Horus	37	Horus	37
8. Amenophis	30	10	Dam-phenophis	30	10	Amenophis	31	Tothmes, r...	40
7. Thmosis (Tothmes II.)	9	8	Tuthmosis	9	8	Tuthmosis............	9		
6. Mephramouthosis	25	10	Methrammuthosis	20	10	Misphragmathosis	26	Misaphris, r.	39
5. Mephres	12	9	Mephres	12	9	Misaphris............	13		
4. Amessis	21	9	Amesse ......(21 9)	21	1	Amersis..............	22	Amersis, r. ..	22
3. Amenophis	20	7	Amenophis..........	20	7	Amenophthis	24	Chebros	24
2. Chebron	13	0	Chebron .... *	13	0	Chebros..............	13	Amos, r.	37
1. Tethmosis (Tothmes I.)	25	4	Amasis .... *	25	4	Amos ....* (24)	—		
Sum..	333	0		273	8				
−66−19=	−47	0	+25 4−13=	+12	4				
Date of Exodus	286	0		286	0	B.C. 1708	286		286

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But the Theophilian scheme is the counterpart of the Flavian; for here the sum of the numbers is made to require the addition of the difference between the two lowermost numbers, to leave the measure of the Exodus before the Menophrean epoch.

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The following is the Table of the third section of [illegible]—

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		Lunar years.	Lunar years.	Solar years.
			B.C.	B.C.
Solomon	After the foundation of the Temple	36·63		
	Before the foundation of the Temple	3·360825		
David..	In Jerusalem	32·5		
	In Hebron	7·5		
Saul ..	After he selected a body-guard	38·		
	When he selected a body-guard	2·		
Samuel		23·350515		
Eli (Samson)		40·		
Second Philistine servitude		40·		
Abdon		8·		
Elon		10·		
Ibzan		7·		
Jephthah		6·		
First Philistine servitude		18·		
Jair		22·		
Tola		23·		
Abimelech		3·		
Gideon		40·	1362·5	1321·625
Midianite servitude		7·		
Deborah		40·		
Canaanitish servitude		20·		
Ehud (Shamgar)		80·		
Moabitish servitude		18·		
Othniel		40·		
Mesopotamian servitude		8·		
The Elders		20·		
Joshua		21·845360		
The Exodus		40·	1657·345	1607·625

The fourth section of Hebrew chronology may be made to extend from the epoch of the foundation, or the laying of the first stone, of the Temple in Jerusalem by Solomon, to the epoch of the completion of the Temple or the laying of the last stone of it by Zerubbabel, when a new one was built in the place of the one constructed by Solomon, which was completely destroyed by Nebuchadnezzar the king of Babylon. There is no portion of the column of time so interesting as this. For in the first section our navigation was in the ocean of ages, in which we had only the heavenly bodies to guide us; in the second we came in sight of land, and, keeping it in view, we passed many promontories; in the third we entered an inland sea through a passage of great celebrity, and sailed by many islands; in the fourth we come to the coasts of Egypt, Syria, Greece, Italy, and meet with the princes and merchants of Assyria, Persia, and caravans from the far East.

The fourth section embraces seven times seventy tropical years. So it was ordained by the Sabeans, that the completion of the second temple should date exactly 490 Nile years after the commencement of the first, in order that it should become a chronological, historical, and a *moral* landmark for the benefit of futurity. Beside its two terminal epochs, this section comprehends five intermediate graduations of the highest importance. Commencing from below, the first is the eleventh lunar year of Jotham, the second is the fourteenth lunar year of Hezekiah, the third is the close of the short reign of Jehoiachin, the fourth is the astronomical epoch chosen for the total destruction of Judah, and the fifth is the decree of Cyrus for the liberation of the Jews from the Babylonian bondage. These graduations on the column of years were most propitious for the records of a variety of important data in chronology and in history, and have become so many seals for the preservation inviolate of the series of the Hebrew political annals.

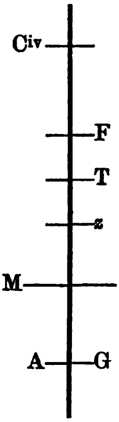
The first epoch falls in the reign of Jotham. There are three numerical groups and a factor masonified in the relation of the last incident in the career of the prophet Elisha. The first group comprehends the prophet in his sickness, Joash the king of Israel, and Hazael the king of Syria, and records the number 3. The second group is made up of a bow and an arrow, and the two hands of the king holding them, and the two hands of the sick prophet directing those of the king, and records the number 6. The third group is the same as the second, and records the number 5, the arrow having been sped in the direction of Damascus. These numbers are confirmed by the three and the five and the six smitings. The presence of the number 2 is indicated by the two actors in the scene; and its value as a multiplier, by the hands in bending the bow and directing the arrow becoming four by being multiplied by the number 2. These masonic numbers, and the duplicate of the sum of the numbers in the second and third groups are reproduced by the additions of years in the coetaneous columns of the reigns of the kings of Israel and Judah, beginning with Chapter xiv. of the Second Book of Kings. Thus the twenty-third year of Joash the son of Azariah king of Judah is made to be identical and concurrent with the first year of the reign of Jehoahaz the son of Jehu king of Israel, who reigned seventeen years; and the thirty-seventh year of Jehoash king of Judah is made to be concurrent with the first year of Jehoash the son of Jehoahaz, who reigned sixteen years over Israel; and the second year of Jehoash the son of Jehoahaz king of Israel (his name being changed to Joash in order to arrest attention, as the name of Azariah has been altered into Uzziah, apparently with the same object) is made to be coetaneous with the first of Amaziah the son of Joash king of Judah. This account leaves a blank section of *three* years on the Samaritan column. Continuing the construction of both columns, side by side, in strict accordance with the directions given by the Hebrew chronographers, a second blank section, measuring *two* years, and further up, a third blank section, measuring *twenty-two* years, will be generated on the Samaritan column, and a fourth blank section, measuring *eleven* years, on the Judaïc column. These blank sections are not interregnal periods. They constitute, in Nile years, a beautiful chronological formula recording that the opening of the eleventh lunar year of the reign of Jotham king of Judah fell in the summer solstice which measured retrospectively $(3 \times 2 + 11) \times (11 + 22) =$ 561 Nile years down to the Menophrean epoch, the great middle line of ages; and that the Nabonasarian epoch measured prospectively (and in the direction of the arrow, which had taken a north-easterly path from the prophet's cell), also in Nile years, $(3+11)=14$ years, and retrospectively, in an opposite direction, $(5+11)=16$ Nile years, to the epoch of the establishment of the Olympic quadrienniums. The duration of the reign of Jotham will have been $(16+11)=27$ lunar years, and that of his predecessor Azariah, who is also Uzziah, $(52-11)=41$ lunar years.

∴ The reign of Jotham will date . . B.C. 770·325
The reign of Azariah will date . . . 810·095
The reign of Rehoboam will date . . 972·175
The foundation of the Temple of Solomon 1007·625
The reign of Solomon . . . . . . 1010·975

The records masonified in the description of the miracle on the Dial of Ahaz are the counterpart of those latent in the dimensions of the Ark of Covenant, giving the measures of the Sidereal year and of the maximum and minimum of Tropical years, in terms of the historical dates, in the scale of Sothis periods, of the accession of Hezekiah to the throne of Judah and of the battle of Gibeon.

The sum of the numbers of years opening the texts of vv. 9 & 10 of Chapter XVIII. of the 2nd Book of Kings, indicates that the formulæ given in Chapter XX. of the same book, and in Chapter XXXVIII. of the Book of Isaiah are of a Sabean character.

There are two numbers of a masonic nature employed in the formulæ of the Dial. The first is complementary: it is composed of 10, the number of the degrees receded by the shadow on the dial, and 14 and 15, or the date in years of the epoch of the miracle in the reign of Hezekiah, and the residue of his reign after that epoch. Let $10+14+15=a$. In the solution of the historical data, a has the value of Nile years; but in that of the scientific data, it has the value of mean solar days, a', and of mean solar seconds of time, a''. The second number is detected visibly masonified in verse 35 of Chapter XIX. of the 2nd Book of Kings: it is the talismanic number of the formulæ, composed of the number of degrees the shadow receded on the dial, and twice the number of noctas in a Sabean cubit of time, viz. $10+(2\times 420)=850=b$. In the resolution of the historical data, b has the value of Nile years of 1461 days to a quadriennum, b'.



On a column of time, let G graduate the epoch of the battle of Gibeon or of Ajalon A; and M the Menophrean epoch (the Medius Ævorum and the close of the Annus Magnus of 4380 sidereal years); z the beginning of the reign of Hezekiah, F the close of the fourteenth lunar year of the reign of Hezekiah, and C^{iv} the opening of the Sothis period of Antoninus *Pius*, which dated 138·375 Nile years after the Dionysian epoch of the Nativity of Christ. Let T be a graduation ten Nile years anterior to F.

The historical record is to the effect that z dated, prospectively, $b+\frac{3a}{7}=850+\frac{3\times 39}{7}=866{\cdot}714$ Nile years to C^{iv}; and, retrospectively, $b-z\mathrm{F}=850-13{\cdot}58=836{\cdot}42$ Nile years to G (or A). The Menophrean sections M z and M G on the column of time will be respectively 593·286 and 243·134 Nile years in measure. Hence z = B.C. 728·339, and G = B.C. 1564·759. The battle of Gibeon will have been fought 4·066 Nile years after the Isodus, and 42·866 Nile years after the epoch of the Exodus.

The scientific records are two in number. The first comprehends the value of the Sidereal or Sothis year, in the formula

$$\frac{b'+\frac{a'-1}{7}}{b}=\frac{365\tfrac{1}{4}^{d}\times 850+5^{d}{\cdot}428}{850}=365^{d}{\cdot}256=365^{d}\,6^{h}\,9'\,11''{\cdot}7983193.$$

The second gives the value of the minimum Tropical year, in the formula

$$\frac{b'-7}{b}=\frac{365\tfrac{1}{4}^{d}\times 850-7}{850}=365^{d}{\cdot}241=365^{d}\,5^{h}\,48'\,8''{\cdot}47.$$

The maximum Tropical year is obtained by adding $2a''$ to the minimum. The deduction of $11''$ from the maximum gives the length of the Tropical year of the Consecration of the Ark of Covenant; and a further deduction of $7''$ leaves the measure of the Tropical year of the reign of Hezekiah, accurately to entire numbers of seconds.

The time from the close of the fourteenth year of Hezekiah up to the epoch of the Babylonian bondage, which is reckoned from the close of the short reign of Jehoiachin, being 114½ lunar years, and the decree of liberation having been made to date seventy lunar years after the epoch of the captivity of the king, we shall have for the date of the captivity B.C. 603·97; for that of the decree, B.C. 533·97; and for that of the laying of the last stone of the new temple by Zerubbabel, B.C. 517·625.

Zedekiah succeeded Jehoiachin, and reigned eleven lunar years. But the date of the destruction of the Temple, the city, and its walls is not clearly specified in the narrative with which the Second Book of Kings terminates. An event of such importance must have been rendered doubly memorable by the date which was given to it. In such matters, the men who were in the councils of Eastern potentates and the sovereigns themselves very often being the most instructed and appertaining to the Sabean school, dates would be fixed, if the times were favourable, so as to become monumental—by hastening or retarding events such as are controllable by man. We perceive that the siege closed, I suppose with the reign of Zedekiah, at a time which wanted but little to attain the middle point of the Sothis period which commenced in B.C. 1321·625. It is therefore probable that Nebuzar-adan was sent some time after the termination of the siege and the capture of the city, carrying with him, or receiving from the king, orders dated 730 *απο Μενοφρεως* to destroy the temple and city. This date is in Jeremiah, and is masonified in his formulæ of the captives and the dates of the reign of Nebuchadnezzar in which they were taken.

Jeremiah's narrative is in two parts. In the first part he prepares the mind for the contents of the second, by imparting information in technical chronology. "And the captain of the guard took Seraiah the chief priest, and Zephaniah the second priest, and the three keepers of the door." This records the cosmical number 5 ($=a$), which is a factor. "He also took out of the city an eunuch, which had the charge of the men of war; and seven men of them that were near the king's person, which were found in the city; and the principal scribe of the host, who mustered the people of the land; and threescore men of the people of the land, that were found in the midst of the city." The eunuch in this formula has the numerical value of half a man. The men are 68 ($=b$) in number. Now $\overline{a+b} \times a = 365$, the addition of the eunuch to the product indicating, masonically, that the ensuing formula of the prisoners is to be in tropical years. "This is the people whom Nebuchadnezzar carried away captive: in the *seventh* year three thousand Jews and three and twenty: in the *eighteenth* year of Nebuchadnezzar he carried away captive from Jerusalem eight hundred thirty and two persons: in the *three and twentieth* year of Nebuchadnezzar, Nebuzaradan the captain of the guard carried away captive of the Jews seven hundred forty and five persons: all the persons were four thousand and six hundred."

The numbers and their functions in the formula of the dates are the following:—

1. The named individuals, Seraiah and Zephaniah, $=2$ (z).
2. The 3 (δ) doorkeepers, and 1 (ϵ) scribe.
3. The 3023 (f) prisoners in the 7th (g) year (7 is a masonic number).
4. The 832 (h) prisoners in the 18th year (18 is the date of reign).
5. The 745 (l) prisoners in the 23rd (m) year (23 is a masonic number).
6. The sum of prisoners 4600; and the sum of years 48 (n).

We are directed to operate on a scale of Sothis periods by the indication in the close of the narrative of the sum of prisoners requiring the addition of ten chiliads of years to complete ten measures of Sothis periods. On the other hand, the precise period in which the destruction of Judah took place cannot have been any other than that which commenced in the Menophrean epoch. Consequently, as the great event to be first recorded is manifestly the destruction of Judah, we have to discover its retrospective and prospective dates from the opening and the close of a Sothis period, which by the division of the prisoners into three bodies is indicated to be the fourth Sothis period from the epoch which is common to all masonic formulæ of a chronological nature, viz. the commencement of the Annus Magnus. Thus the date of the principal event is $l-\overline{z+g}=736$ Nile years, and occupies the middle point of the fourth Sothis period (=B.C. 1321·625 −736=B.C. 585·625). The second record is the date of the same event from the foundation of the Temple $\left(\text{for } \frac{h}{z}=416\right)$ =B.C. 1007·625. The third record determines the date of the same event from the epoch of the Exodus (=B.C. 1607·625), by the following formula: $\frac{f+m+z}{\delta}=1016$. But the fourth formula fixes the date of the same event from the birth of Abram (=2280·13 B.C.); thus $z\left(h+\frac{n+s}{\delta+s}\right)=1688{\cdot}5$. Hence we have from the birth of Abram to the Exodus 672·5 years; from that to the Menophrean epoch 286 years; from that to the foundation of the Temple 314 years; from that to its utter destruction (in the close of the eighteenth Nile year of the reign of Nebuchadnezzar) 416 years, recorded by Jeremiah. From the date of the destruction until the completion of the renewed edifice, the lapse of time is seventy-four years of seasons.

In the last chapter of the Book of Daniel the description of the rule regulating river observations is followed by a masonic formula in two divisions. One of them involves the record of two Sothis periods in Egyptian years, by means of the numbers 1334·6 (entered 1335 because the fraction exceeds the half of a unit) and 1290·3 (the fractional part not having been entered because it is less than a half) in terms of the formula of *time, times* and *a half*. Thus 1334·6−1290·3 =44·3=a; then $a+a^2+\frac{a+a^2}{2}=1461{\cdot}03$ Egyptian years, the numerical values in the formula being in lunar years. The other is the record of the measure of time prospectively from

Table of the Fourth Section of Hebrew Chronology.

	Lunar years.	Tropical years.
		B.C.
*Date of completion of the second temple in the sixth year of the reign of Darius the son of Hystaspes	19·015	517·625*
*The decree of liberation in the first year of the reign of Cyrus in Babylon	33·020	536·070
*The first year of the reign of Astyages, the last of the Chaldæan kings............	24·269	568·099
*The epoch of the destruction of Judah by Nebuzar-adan, dating the sum of one lunar year and 3^m 8^d and 5^m and 10^d from the close of the eleventh lunar year of the reign of Zedekiah (=1·721)	0·	591·625*
The close of the reign of Zedekiah.........	11·	593·3
The opening of the reign of Zedekiah		603·970
*Jehoiachin	0·25	
Jehoiachim	11·	
*Jehoahaz	0·25	
*Josiah (the 19th year of Jubilee happened in the year of his reign)	31·	645·195
Amon................................	2·	
Manasseh	55·	
*Hezekiah (the 17th year of Jubilee happened in the year of his reign)	29·	
Ahaz	16·	
**Jotham	27·	770·325
Azariah	41·	810·095
Amaziah	29·	
Joash	40·	
Athaliah	6·	
Ahaziah	1·	
Jehoram	5·	
Jehosaphat	25·	
Asa	41·	
Abijam	3·	
*Rehoboam............................	17·	972·175
Remainder of his reign	29·63917	
* Completion of Temple..............	7·	1000·835
* Foundation of Temple..............	0·	1007·625*
Solomon. Epoch of his reign	3·36082	1010·972

the date of the completion of the temple in the reign of Darius Hystaspes to the coming epoch of the Nativity of Christ. The numbers used are 24 and 15. The former is the expression of the secular maximum of the flood-state of all rivers; and in the Nile, at the Memphis Observatory, the secular maximum is indicative of the autumnal equinox, the water-levels observed in the chamber not being the levels at the opposite shores of the river, but in the strongest current; for the lateral levels are variable, while the line of strongest current remains permanent,—ordinates conceived to be demitted from the culminating point of any transverse section of the river down to certain tidal levels of the ocean tending always to preserve a certain metric value. The other number is the measure in Nile cubits of the secular maximum amplitude of the Nile in the latitude of the Memphis Observatory. The number 15 is the product of the number which is the principle of all things, and the cosmical number 5. The literal form of the number 3 × 5 pronounced the name of the Most High Being in the Hebrew language, and was susceptible of being represented in the form of a triangle. It may be suggested that the insertion of the human eye in the triangle made an emblematical figure of observation, first by the use of the eye, which enables man to know God through his works. Let $b=24$, and $c=15$. Then by the same formula of *time, times* and *a half,* we shall have $b+b^2+\frac{b+b^2}{2}-\left(c+c^2+\frac{c+c^2}{2}\right)=900-360=540$ sacred years of 360 days $=532{\cdot}238$ Julian years $=\mathrm{D}$. Now $\mathrm{D}-\frac{7\,b\text{ days}}{365{\cdot}25}=532{\cdot}238-0{\cdot}459=531{\cdot}778$, the date of the first year of the second king of the four Persian kings of Daniel, viz. of Cambyses the son of Cyrus, computed prospectively back from the middle point between the 1360th and the 1365th lunar years from the Menophrean epoch. The same graduation was adopted by Dionysius for a fixed epoch for the Nativity of Christ. But $\mathrm{D}-\frac{360\,c-7\,\overline{\overline{b-c}}}{365{\cdot}25}=517{\cdot}626$, the date of the close of the sixth Nile year of the reign of Darius the son of Hystaspes, the third Persian king, and the date of the completion of the second temple by Zerubbabel and Jeshua (Joïadah being pontiff), computed, prospectively, back from the same masonic epoch of the Nativity. As the close of the sixth Nile year of Darius the son of Hystaspes was the close of the 804th Nile year of the Menophrean epoch, we understand the reason why the Sabean writers suspended the works of the building of the temple (or, it may be, deferred the laying of the first stone and date thereof) in the second year of the reign of the king. Had Darius ascended the throne two full years later, the epoch of his reign might have been favourable for the accomplishment of his desire concerning the monument of Sesostris in Memphis. The date of the first year of Cyrus, which was the close of the memorable seventy weeks of lunar years of the Babylonian bondage, reckoned from the epoch when Jehoiachin, his family, and nobles were led in captivity to Babylon, is confirmed by a previous Sabean formula, in the ninth chapter of Daniel's Book, in which *weeks* are periods of seven Nile years. Thus, Cyrus, being about sixty-two years of age, subverted the Chaldæan empire and took Babylon in B.C.

$$(7 \times \overline{2+60}) + \left(\frac{7+2^2+60}{2^2}\right) + \left(7 + 7^2 + \frac{7+7^2}{2}\right) = 535{\cdot}75.$$

These masonic formulæ have shown us how to construct the following section of the Babylonian chronology :—

The commencement of the reign of	B.C.	A. Nabonassar.	
Darius the son of Hystaspes .	523·626	=223	
Cambyses	531·778	=214·85=	Olymp. 61+0·846
Cyrus in Babylon	535·750	=210·875	
Astyages (Nabonadius, &c.) .	568·099	=178·525	
Nebuchadnezzar	609·625	=137	

Limiting the monarchy of Amasis, the last king of the Saïte section of Manetho, to thirty-six Nile years, he will have died 0·088 of a Nile year anterior to the third summer solstice of the sixty-third Olympiad. And if the invasion of the Persian dated in that solstice, Psammecherites the son of Amasis will have reigned about a month before the arrival of Cambyses. The Persian made use of the authority of the young king to transmit his orders to the Egyptian functionaries. But after a nominal reign of five months more, Cambyses put him to death. The reign of Cambyses, not reckoning the seven months of the usurpation of the two Magi, comprised a space of eight years and nearly two months; and he had reigned five years and about two months when he entered Egypt.

The fifth section of Hebrew chronology may be made to extend from the close of the sixth year of Darius the son of Hystaspes to the epoch of the destruction of the city and temple of Jerusalem by Titus in the close of the second year of the reign of Vespasian in A.D. 70=1391·625 Nile years after the Menophrean epoch. From Joïadah, the first pontiff who officiated in the new temple, to the establishment of the house of Judas Maccabæus, there are seventeen pontiffs in the space of 350 Nile years. The duration of the house of Maccabæus, until Herod was made absolute monarch and king of Jerusalem by the Romans, is reckoned 130 years in twelve reigns. Herod reigned thirty-four Nile years, and died about the commencement of the third year before the Dionysian epoch of the Nativity, and in the close of the first year of the pontificate of Jesus. There were twenty-one other high priests, including Mathias, the last of the race of Aaron, who from the death of Herod administered the temple during seventy-three years, when it was destroyed by Titus. The whole space of time from the laying of the last stone by Zerubbabel, Jeshua, and Joïadah, until the destruction by the Roman power, is 587 Nile years. The principal eras and epochs of the western world in their connexion with the great middle line of years and to each other are shown in the following Table:—

	After Dionysian epoch of the Nativity, in Nile years.	After Menophrean epoch, in Nile years.	After Menophrean epoch, in lunar years.
Era of Diocletian	284·125=	1605·75	
E. of Antoninus *Pius*	138·375=	1460·	
E. of Bostra	94·565=	1416·2 =	1460·
E. of the Nativity of Christ	0· =	1321·625=	1362·5
E. of last stone of the additions made to the temple by Herod	−8·251=	1300·	
E. of Augustus, and of the first stone of the additions made to the temple by Herod	−29·876=	1291·749=	1333·3=40 generations of lunar years.
E. of the death of Alexander and of the establishment of the three kingdoms	−321·625=	1000· =	1030·

It is also to be remarked that, the space of time from the decree of liberation by Cyrus until the destruction of the city and temple by the Romans being 605·75 Nile years, the space of time from the close of the sixth year of Darius to the same event is 605·154 lunar years. Now we remember that the interval from the decree up to the close of the sixth year of Darius is 18·125 Nile years.

The following is the Table of the fifth section of Hebrew chronology.

	A.C.
Destruction of temple and city of Jerusalem by Titus	70
Mathias II., the last of the race of Aaron	64
Jesus VI.	63
Jesus V.	62
Joseph Cabi III. and Ananus II.	61
Ismael II.	58
Ananias	48
Joseph II.	45
Simon Canthares VI.	43
Elionæus	42
Simon Canthares VI. and Mathias	41
Theophilus	37
Jonathan IV.	36
*Joseph Caïaphas I.	26
Simon V.	25
Eleazar III.	24
Ismael I.	23
Ananus I.	7
Joazar, restored	7
Jesus IV.	7
Eleazar II.	6
Jesus III.	5
	B C.
Joazar I.	4
Mathias I.	6
Simon Boethus IV.	24
Jesus II. son of Phabes	30
Aristobulus III.	35

		B.C.
Ananelus		37
(Herod and Mariamne		37)
Antigonus		40
John Hyrcanus III.		57
Aristobulus II.		66
John Hyrcanus II.		70
Alexandra		72
Alexander Jannæus		106
Aristobulus I.		107
John Hyrcanus I.		135
Simon III.		143
Jonathas		161
Alcimus		162
Judas Maccabæus		167*
Mathathias		168
Onias IV.		173
Jesus I.		176
Onias III.		202
Simon II.		224
Onias II.		236
Manasses		262
Eleazar †		294
Simon I.		303
Onias I.		324
Jaddus		344
Jonathan III.		376
Joïadah II.		412
Eliasib		461
Joachim	29	490
Jonathan II.	14	504
Joïadah I.	13	517*
	19	536

The second temple was finished in the close of the nineteenth year of the pontificate of Joïadah I.

We have now to consider the chronologies of the Chaldæan and Persian dynasties. The earliest accounts we possess of those dynasties are the astronomical canon of Ptolomæus of Pelusium, its version by Theon of Alexandria, and the ecclesiastical account. The Chaldæan kings reigned in Babylon, in fourteen successions, beginning with Baladan, and ending with Nabonadius, the space of 210·87 Nile years. These were followed by the Persian dynasty of Cyrus, who in thirteen successions, not counting the usurpation of the brothers Smerdis and Pausoutes, reigned the space of about 206 Nile years, to the epoch of the death of Darius Codomanus. The second, the third, the fourth, and the thirteenth names entered in the canons are those of Assyrian kings who reigned in Nineveh contemporaneously with Baladan and his son Mardocempadus, Belibus, Aparanadisus, and Erigebalus, Chaldæan kings in Babylon. The two interregnal sections are a geometrical contrivance to distinguish the several regnal durations of the contemporaneous reigns of the two parallel columns.

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† The Bible was translated into Greek in the twenty-third year of his pontificate.

Although the three chronologies have a common starting-point, the epoch of Nabonasar, yet the measures from it up to the close of the reign of the Persian king Arces are 408 years in the ecclesiastical, and 412 in the astronomical canon, and 404 in its version by Theon. Moreover the ecclesiastical column contains the separate reigns of two more kings than the others, introduced between Artaxerxes Longimanus and Darius Nothus; while in the Persian section of the Egyptian lists Manetho inserts a third king, Artabanus, between the reigns of Xerxes the Great and Artaxerxes Longimanus. Such are the chronological discrepancies in the three accounts, that while the eighteenth year of Nebuchadnezzar has been made, in the researches into Hebrew chronology, to terminate in B.C. 592, the same year of his reign in the ecclesiastical canon expires in B.C. 544, and in the two other accounts in B.C. 561 and B.C. 542.

The Chaldæan and Persian architects and engineers—who, on account of their learning and utility to the public in the planning and execution of works of irrigation and drainage, in times when geological motions were taken into consideration and constantly observed, and in the construction of bridges, temples, and national monuments, formed a class of the priesthood—were guided by the same conventional rules in imparting siriadicity to their monuments as their brethren in Egypt, India, China, Che-pan, and other parts of the civilized world. Yet they appear to have had a certain method peculiar to their country, which it is probable they adopted after the constitution of a chronological epoch—the Nabonasarian epoch, which became the zero point of their masonic scale for the record of dates of buildings erected by their kings—masonifying, in a building constructed by a king, the epoch of his accession to the throne of his ancestors by the measures assigned to the linear dimensions of the solid materials entering into the construction of the edifice such as paving-stones, brick and stone masonry. And as their common epoch, or starting-point, did not permit the metric values of the numbers of years to be recorded, there were periods when they had to be multiplied by 4, and in later times by 2. It is extremely probable that they rendered vocal not only the materials of construction, but also observed the same Arionic rules with regard to the forms and dimensions, the hydraulic levels and the geographical positions of their siriadic monuments, as obtained in Egypt and elsewhere—though it would appear that, long anterior to their epoch of Nabonasar, the Babylonians differed from the nations east of them by making the basis of their masonic formulæ the expression 7 × 6, while the original language of the children of Seth was in 6 × 6. Afterwards the Hebrews differed from the Babylonians and the rest of the world by adopting the form 7 × 7. But the Egyptians conformed with the original dialect, their unit of measure being composed of 360 noctas, while the Hebrew unit would appear to have contained 490 noctas, and the Babylonian 420 noctas.

Eminent antiquaries, in their explorations of the ruins of Nineveh, Babylon, Khorsabad, and other celebrated localities in Mesopotamia, have discovered monumental treasures of the greatest importance in history; and the mysteries of the cuneiform characters have been dissipated by the patient researches of the illustrious linguists of modern Europe. The knowledge acquired by the perusal of the inscriptions and the dimensions of the building-materials of some of the Asiatic monuments has produced fruit, in so far as by their means we have been enabled to reconcile the Chaldæan and Persian canons with their concurrent sections in Egyptian and Hebrew annals, making it manifest that the alterations in the accounts which have made them disagree to so wide an extent, have been rather designed dislocations than inaccuracies of original data, evidently made with the object of closing every avenue which might possibly lead inquiry to stumble upon and, overturning the idol erected for the herd of mankind, to disclose the Sothoïc mysteries.

MM. Botta and Place state that the crude bricks of a great monument in Nineveh, bearing in their mould the name of the Chaldæan king Nirigasolasar, measure in their *heights* 311 millimetres of the French scale, and that the paving-stones of the courts of another monument in Khorsabad were square, and measured 840 millimetres each side. M. Jules Oppert assigns 505 millimetres to the measures of the sides of the square paving-stones of another monument in Babylon. The sea, river, and land sections of those monuments were not made; but if they had been determined, we should have found their dates confirmed by millions of little tongues; and we should have been able to determine the changes which had affected the land since those monuments were erected,—the geological motion in those regions being affected by continuous plutonic upheaval, raising lands, with their canals and water-courses, above the highest reach of the rivers. The date of the Nineveh monument will be $\frac{3{\cdot}2809 \times 0{\cdot}311}{2 \times 0{\cdot}00478}, = 106{\cdot}725$ or 107 Nile years from the Nabonasarian epoch. The date of the Khorsabad monument will be $\frac{3{\cdot}2809 \times 0{\cdot}840}{2 \times 0{\cdot}00478}, = 288{\cdot}261$ in Nile years from Nabonasar; and the date of the Babylonian monument will be $\frac{3{\cdot}2809 \times 0{\cdot}505}{2 \times 0{\cdot}00478}, = 173{\cdot}311$ in Nile years from the epoch of Nabonasar. The reign of Nebuchadnezzar dating B.C. 609·625, that of his father Nabupolasar, who reigned twenty-one years, will date B.C. 630·625; that of his predecessor Illoarudamus, who reigned five years, will date B.C. 635·625; and that of his predecessor, to whom the monument of Nineveh belonged, and who reigned four years, will date B.C. 639·625. The predecessor of Nerigasolasarus, who reigned twenty-two years, will date B.C. 661·625; his predecessor Saosduchinus reigned nine years. From Saosduchinus back to the epoch of Nabonasar the regnal sections in the three accounts are the same, and amount to seventy-six years. The date of the reign of Nabonadius, the successor of Nebuchadnezzar, being 568·099 B.C., the reign of Nebuchadnezzar will not have exceeded 41·526 years. The Babylonian monument manifestly belongs to Nabonadius. M. Jules Oppert's measure should have been about 515 millimetres.

In the Persian section we have to determine the regnal durations from the commencement of the reign of Darius the son of Hystaspes to the epoch of the conquest of Egypt by Alexander the Great. In it we have two beacons to guide us: the first is the date of the Khorsabad monument (viz. B.C. 776·625 — 288·261 = B.C. 488·364), and the second is the statement of the compiler of the Olympic annals, that the Egyptian king Teos, who is Tachus the Sebennyte, went in the first year of his reign to Arabia to meet Artaxerxes Mnemon, who died in the same year, in the third year of the 104th Olympiad, after a reign of forty-three years. The sum of years from the close of the reign of Artaxerxes Mnemon to the conquest of Egypt by the Macedonian will amount to thirty years, which are thus distributed:—to Darius Codomanus four years; to his predecessor Aregus three years; and to Ochus II., the son of Artaxerxes Mnemon, necessarily twenty-three years. Descending the column of years back from the commencement of the reign of Ochus II., we have forty-three years for Artaxerxes Mnemon; nineteen years for his predecessor Darius Nothus; seven months for the reign of his predecessor Sogdianus; and two months for that of his predecessor Xerxes III. Hence the duration of the reign of Artaxerxes Longimanus will be 33·989 years. The predecessor of Artaxerxes Longimanus, whose name is not mentioned in the canons, but is found in Manetho's Nile lists, may have been either a regent in the minority of the king, or may be a section of a masonic nature to point to the date of a great monument in Khorsabad which was not dedicated to the first year of the reign of the king. In the Manethonian lists seven months are assigned to Artabanus. But a shrewd conjecture may be made, that in the original Nile lists of Manetho the space of time given to Artabanus was seven years and seven months. Allowing thirty-six years for the duration of the reign of Darius the son of Husht-asp, we shall necessarily have 21·679 years for the reign of Xerxes the Great. All accounts agree in allotting thirty-six years to Darius. But there is much discordance concerning the duration of the reign of Xerxes the Great: the ecclesiastical canon gives him one year and eight months; the two versions of the astronomical canon assign to him twenty-one years; and two other accounts give him twenty years and twenty-one years. There is, however, a pointed indication that the number in the ecclesiastical canon was originally twenty-one years and eight months, and that it was the true historical number.

The separation of the succession of four Assyrian kings, and the determination of the dates of their reigns, which have been incorporated with those of the Babylonian kings, will require that we should first project the Babylonian section. The first Babylonian sovereign in the canon is Baladan: he reigned thirty-seven years. He is entitled Shalmaneser, Salmanazar, and Tiglath-pileser. The close of the eleventh year of his reign measured two dactyles of Nile years from the Olympic epoch, and, being adopted for a new epoch by the Babylonians, received the designation of Nabonasar. He was succeeded by his son Mardoc-empadus or Berodach-Baladan, who reigned fourteen years. The third in succession is Belibus, who reigned three years. The upper line of the first interregnal section is common to the close of the reign of Mardoc-empadus and the commencement of his own reign. The fourth, Apronadius, reigned six years. The fifth, Rigebalus, reigned one year. The sixth, Mesessimordachus, reigned twelve years. The seventh, Isarindinus, fourteen years. The eighth, Laosduchinus, nine years; and the ninth, Cineladanus, who was succeeded by Nireglesarus, the builder of the monument in Nineveh, reigned twenty-two years. Now, in the close of the twenty-fifth year of Baladan, the Assyrian king Nabios began to reign, and reigned two years. His successor

The Chaldæan Dynasty.

	The Ordinal numbers.	Lengths of the reigns in the Ecclesiastical Canon.	The Ordinal numbers.	Lengths of the reigns in the Astronomical Canon of Ptolomæus.	The Ordinal numbers.	Lengths of the reigns in the Canon of Theon's version.	Lengths of reigns according to Herodotus, Manetho, Hieronymus, &c.	The Ordinal numbers.	Lengths of reigns rectified by Monuments of a Siriadic nature.	Dates of the commencements of the reigns anterior to the vulgar epoch of the Nativity of Christ.
										B.C.
1. Nabonas(s)ar-us. S(h)almana(e)s(z)a(e)r. Tiglath-pileser. Baladan..........	1.	25	1.	14	1.	14	....	1.	37·11	746·625
2. Nab(d)io(u)s .... A.	2.	8	2.	2	2.	2	....	1. A.	2	732·625
3. Chinzi(e)rus and Porus .... A.	3.	5	3.	5	3.	5	....	3. A.	17	725·625
4. Illulæus. Jugæus .... A.	4.	5	4.	5	4.	5	....	2. A.	5	730·625
5. Mardocempadus. Berodach-baladan..........	5.	12	5.	12	5.	12	....	2.	14	735·625
6. Arce(i)anus. Asordanus. Esarhaddon.......... A.	6.	5	6.	5	6.	5	....	4. A.	20	708·625
7. Interregnum	7.	2	7.	2	7.	2	....	....	....	....
8. Belib(l)us..........	8.	3	8.	3	8.	3	....	3.	3	721·625
9. Aparanadisus. Apronadius	9.	6	9.	6	9.	6	....	4.	6	703·625
10. Er(R)igebalus..........	10.	1	10.	1	10.	1	....	5.	1	697·625
11. Meses(s)imordacus	11.	4	11.	4	11.	4	....	6.	12	696·625
12. Interregnum	12.	8	12.	8	12.	8	....	....	....	....
13. Isarindinus. Assaradinus	13.	13	13.	13	13.	13	....	7.	14	684·625
14. Saosduchinus. Laosducheus	14.	9	14.	9	14.	20	....	8.	9	670·625
15. Cineladan(l)us	15.	14	15.	14	15.	22	....	9.	22	661·625
16. Nabo(u)po(a)lasarus (the father of Nebuchadnezzar). Nabocolassarus	16.	21	16.	21	16.	21	....	12.	21	630·625
17. Nabuchodonosor his son. Nabopalasarus. Nabocolassarus. Nebuchadnezzar..........	17.	43	17.	43	17.	43	....	13.	41·526	609·625
18. Illoarudamus. Euilad-Marodach	18.	5	18.	3	18.	2	....	11.	5	635·625
19. Nirig(c)as(s)olasarus, Niriglesarus, Neriglissar, who is Baltasar. Nergal-Sharezer the Rab. Mag.	19.	3	19.	5	19.	4	....	10.	4	639·625
20. Nabonadius, who is Asty(a)ges, Darius-A(ha)ssuerus and Artaxerxes. Ev(u)il(ad)-merodach. Belshazzar. Bil-shar-uzur. Sardanapalus..........	20.	17	20.	34	20.	17	....	14.	32·349	568·099

The Persian Dynasty.

21. Cyrus. Husht-asp. Hystaspes. Darius (I.) the son of his *father* Xerxes. *Aha*-suerus	21.	31	21.	9	21.	9	6	15.	3·972	535·75
22. Cambyses. Darius (II.) the son of Cyrus	22.	8	22.	8	22.	8	6·5$^{\mathrm{m}}$	....	....	....
23. The Magi, two brothers Smerdi(u)s and Pausoutes	23.	0 7$^{\mathrm{m}}$					8	16.	8·152	531·778
			....	....	....	....	0·7	....	....	....
24. Darius (III.) the son of Hystaspes. Artaxerxes. Art(d)a-Sheer, Dara, A(ha)suerus	24.	36	23.	36	23.	36	36	17.	36	523·625
25. Xerxes the son of Darius III.	25.	1 8$^{\mathrm{m}}$	24.	21	24.	21	20 & 21	18.	21·68	487·625
* Arta(e)banus	..	....	....	....	....	....	0·7$^{\mathrm{m}}$	19.	7·583	465·945
26. Artaxerxes the son of Xerxes I. (and father of Xerxes III.). Longimanus	26.	43	25.	41	25.	41	41	20.	33·987	458·362
27. Xerxes III. the son of Artaxerxes	27.	0 2$^{\mathrm{m}}$	....	....	....	....	0·2$^{\mathrm{m}}$	21.	0·165	424·375
28. Sogdianus	28.	0 7$^{\mathrm{m}}$	....	....	....	....	0·7$^{\mathrm{m}}$	22.	0·583	424·210
29. Darius Nothus. Ochus I. Darius II. (IV.)	29.	19	26.	19	26.	19	21 & 19	23.	19	423·627
30. Artaxerxes Mnemon	30.	40	27.	46	27.	46	43	24.	43	404·627
31. Ochus II. the son of Artaxerxes (Mnemon)	31.	5	28.	21	28.	21	22 & 26	25.	23	361·627
32. Arces the brother of Ochus. Arostes. Aregus. Sasus. Ars(c)amus	32.	4	29.	2	29.	2	3 & 4	26.	3	338·628
33. Darius III. (V.) the son of Ars(c)amus	33.	6	30.	6	30.	4	6 & 4	27.	4	335·628
34. Alexander of Macedon	34.	6	31.	6	....	8	(Conquest of Egypt by Alexander.)			−4 331·628

Ilulæus reigned five years. To him succeeded Sennacherib, who reigned seventeen years. Sennacherib was succeeded by his son Asordanus or Esarhaddon, who reigned twenty years. These are the only kings of the Assyrian dynasty mentioned in the canon. Some silly monks—I suppose with no worse motive than the fear of the discovery of the Sothoïc mysteries becoming hazarded in case any one of the biblical synchronisms with those of the Egyptian and Babylonian histories should be realized—have cancelled the name of Sennacherib, and put in its stead the Arabic for *hog*, with a Latin termination; and in the full security that their imposture would not be discovered, they indulged themselves so far as to add to the Arabic word its translation in Latin. Afterwards some charitable hand suppressed the third consonant; and additional care was taken against detection by entering Khanzir-us and Porcus between Nabios * and Ilulæus †.

The above (pp. 86, 87) is a comparative table of the versions of the canons, to which are added two columns, one containing the variations in the lengths of reigns given by Manetho, Herodotus, and Hieronymus, and the other devoted to the rectifications. The ordinal numbers of the reigns are reproduced against each column separately. The letter A. denotes the Assyrian kings. The prevailing season in Mesopotamia being ecpyrosal from an unknown epoch anterior to the time of Baladan, the Babylonian geochronological column will have been elevated above the hydraulic levels, and the regnal rings will stand above those which they precede in date. Consequently in the copy of the column we shall have to enter the oldest reign first, contrary to the Egyptian method.

The Parian tablets are the most trustworthy document we possess of the Greek system of chronology. Their author is said to have been Demetrius Phalereus, who was contemporary with Manetho and Eratosthenes. Whoever was their author, he was of the Sabean school, and one initiated in the Sothoïcal mysteries of Eleusis, which were introduced into Greece by

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* The Mohammedan prophet!

† Allah (God), measuring half a Sothis period anterior to the Christian epoch!

Eumolpus the son of Musæus, probably from Egypt. Perusing the lists with attention, and keeping in mind that the great middle line of years is the soul of all chronological schemes, and the unfailing key to all that which has hitherto remained sealed up, we shall find that the compiler of the lists begins by informing us that he was a Sabean by selecting that graduation on the column of years from which a Sabean cubic measure of tropical years being demitted should mark the opening of the administration of Creon, the first of the annual archons; and, in order to remove ambiguity and to confirm his statement, he repeats it by demitting a palm of the Sabean cubit from Creon to Charops, the first of the seven decennial archons. His starting-point is therefore the close of the 128th Olympic quadriennium, in which Seleucus of Macedon was victor. The Parian chronology is in solar years, and is vivificated by being coordinated to the Menophrean epoch. It is divisible into four periods. As the close of the 128th Olympic quadriennium dates B.C. 265 (264·625), the first period, in the descending order, will measure 420 years to the beginning of the archonship of Creon in B.C. 685; the second period, measuring seventy years, will graduate the commencement of the archonship of Charops in B.C. 755; the third period measures 316 years, a space of time occupied by thirteen perpetual archons, the first of whom was Medon, whose administration commenced in B.C. 1071. The sum of solar years from the close of the 128th Olympic quadriennium to the opening of the administration of Medon being 806, the Sabean's number of 25, which has not been readily accounted for, converted the stated measure of solar years into lunar years by its simple addition to it, and constituted a check on the true measure of the three periods. The fourth period is that of the kings who reigned in Athens, commencing with Cecrops, and ending with Codrus and a year's interregnum; it is divided into three sections by the introduction of the Menes-phthean section of twenty-two years. The upper section is of 113 years, and graduates the epoch of the fall of Ilion in B.C. 1184; and the lower section measures 352 years, and graduates the epoch of the reign of the Diospolitan Chebros, in Athens, in B.C. 1547. The central section is divided into four parts, measuring severally, and in the descending order, 9, 5, 6, and 2 years. The numbers 2, 6, 5, added to the measure of the lower section, produce severally the well-known numbers 354, 360, and 365; the last number closes the thirteenth year of the reign of Menes and Pthah, and marks the value in days of the Egyptian year. To obtain the mean tropical year, add to 365 the quotient of the division of the whole number of the Menophrean section, 22, by ten times the fourth section (10 × 9). We shall have 365·244; but by deducting thirteen from the second remainder, and dividing the difference by 90, we obtain 365·243. It is not by any error in the inscription that the taking of Troy in the close of the thirteenth year of the central section has been valued at 854 years anterior to the 129th Olympiad, nor that the Ionian migrations, dated also in the thirteenth year of the central section, have been valued at 713 years anterior to the same Olympiad; for 𐅅HHHH𐅄IIII—𐅅HHHΔIII =HΔΔΔΔI lunar years, =136·77 Nile years, is, or should be, the retrospective date of the Menophrean epoch from the epoch of the fall of Troy. It is possible that there has been a unit added to the number of years in the 28th entry of the tablets, and that it was originally 𐅅HHHΔII.

The only Olympiad which was omitted in the register of the Eleans was the 360th quadriennium from the epoch when the first games were celebrated in honour of Jupiter Olympius by the Phrygian Pelops in B.C. 1372·625. They were repeated by the Theban Hercules in B.C. 1352·625, or B.C. 1348·625. But these retrospective dates do not appear to have any historical foundation,—it being more probable that Pelops celebrated certain games in the 131st *generation* (of three to a century) of the Annus Magnus, and that they took place in B.C. 1335 (not in 1350), and that other games of a Sothoïcal nature were celebrated by the Theban Hercules in B.C. 1321·625. But those games which were repeated once in every four years, established by Iphitus, king of Elis, dated 545 Nile years after the Menophrean epoch.

In the Grecian scheme of chronology, the fourth period, which is that of the kings who reigned in Athens, being in a masonic form, is reducible to its political or historical form by adding thirteen years to Demophon, and twenty-two years to Cecrops II.; so that the close of the thirteenth year of Demophon will be the epoch of the fall of Troy, and the close of the fortieth year of Cecrops II. the Menophrean epoch. Retaining the other numbers of the regnal sections, we shall find that the chronicles will have commenced precisely at the time assigned by Manetho to the beginning of the reign of Chebros in Egypt.

	Nile years.	B.C.	
421st Archon, Diognetus	0	264·625	
*	*		
1st Archon, Creon	420	684	
*	*		
Eryxias	10	694	
Apsandrus	10	704	
Leocrates	10	714	
Hipponeus	10	724	
Clidicus	10	734	
Æsimedes	10	744	
Charops	10	754	
*	*		
Alcæmon	2	756	
Æschylus	23	779	
Agamestor	20	799	
Thespeius	27	826	
Ariphron	20	846	
Pherecles	19	865	
Diognetus	28	893	
Megacles	30	923	
Phorbas	31	954	
Thersippus	41	995	
Archippus	19	1014	
Acastus	36	1050	
Medon	20	1070	
*	*		
Interregnum	1	1071	
Codrus	21	1092	
Melanthius	37	1129	
Thymœtes	8	1137	
Aphidas	1	1138	
Oxyntes	12	1150	
*Demophon	46	1196	33=1183·625 * * Olympic epoch of 13=1196·625 [Iphitus.

	Nile years.	B.C.	
Theseus	30	1226	
Ægeus	48	1274	
Pandion II.	25	1299	
*Cecrops II.	62	1361	22=1321·625 * * Menophrean epoch. 40=1361·625
Erichtheus	50	1411	
Pandion I.	40	1451	
Erichthonius	50	1501	
Amphictyon	10	1511	
Cranaus	9	1520	26=1546·625 Reign of Cecrops in Athens. *
Cecrops I.	50	1570	24=1570·625 Reign of Cecrops in Egypt.

From the commencement of the reign of Erichthonius to the close of the reign of Pandion I. the measure of time is six dactyles, but to the Menophrean epoch twelve dactyles. These were the Idæi Dactyli of the fables: probably the first group of ninety years was designated Celmis, and the second Damnaneus. Iron was known many centuries before the period of the second dynasty of Diospolitans, articles made of it having been found in the deep excavations under the pavements of the temple of Vulcan in Memphis. The close of the eighth year of Pandion II. completed two dactyles of years from the Menophrean epoch, and was the date of the institution of the first lustration in Athens.

Menestheus in the Demetrian scheme had the same value as Sethos or Sothis in the Manethonian. Ramses I. became invested with the title of Sothis in the twenty-first year of his reign, and retained that name until his end; so that an event dating in the twenty-fifth year of Ramses I. would be assigned to the fifth year of *the reign* of Sothis. In like manner Cecrops II. in the forty-first year of his reign, and Demophon in the fourteenth year of his reign, acquired the title of Menes-Phtheos or Menephthah, because the former marked the great astrogeological epoch of the helio-isiac generation of Sothis in the greatest observatory of the world, that of Zeus Sinopites near Memphis, and the latter the great historical epoch of Grecian history which was fixed on the column of years siriadically. Demetrius, however, united both sections and placed them together between Theseus and Demophon, and, calling it Menestheus, indicated its *thirteenth* and its *twenty-second* years for the secret-key numbers. His object was not so much to determine the epoch of the fall of Ilion, which was well known, but to record its measure from the Menophrean epoch, which was only known to a few, and by that means sealed his chronology with a seal which was understood only by those who were initiated in the Sothoïcal mysteries.

The Armenian epoch of Haygh is a chronological scheme based on the chronological graduations of four important epochs, which are (1) the evangelical epoch of the Nativity of Christ, (2) the Menophrean epoch, (3) the epoch of the Exodus, and (4) the epoch of the commencement of the tropical cycle when the year was the longest, and which measured a Sothis period anterior to the Exodus, and had determined the time of that great event in the history of the Israelites; for the addition of the masonic duration assigned to the Arsacide dynasty (577·5 tropical years) to the masonic duration assigned to the Hayghide dynasty (2492·55 tropical years) gives the measure of the space of time from the commencement of the tropical cycle up to the epoch of the Nativity adopted by the Evangelist Luke. Thus B.C. 1324·05 + 286 + 1460 = 2492·55 + 577·5. The whole numbers 577 and 2492 have therefore no historical character, but are simply commemorative of the four other epochs. It is well known that the political period of the Arsacide dynasty commenced about B.C. 254, and lasted 482 years. The Haygh scheme of the Armenians is a valuable document, because it proves that those who formed it were acquainted with the existence and the chronological values of the other great epochs. It may therefore be ranked among the great Siriadic monuments transmitted to us in writing by our forefathers,—informing us, not that Haygh conquered and killed Bal the king of Babylon, who invaded his country, in a battle near Ararat, after the confusion of tongues, and established his dynasty in B.C. 2492, which endured 992 years, and was succeeded by the

Arsacide dynasty, which lasted 577 years,—but that the sum of those numbers measured the interval of time between the commencement of the great tropical cycle and the epoch of the Nativity of Christ adopted in the genealogical scheme of the first Evangelist.

The chronological schemes of the Indians, the Chinese, the Japanese, and of other Asiatic nations, should be found to have been devised on the same principles as those of Egypt, Judæa, Babylonia, Greece, and Armenia, and to form a great history of mankind by having well-defined links connecting the one with the other; but as their basis was astronomy and geology, it will be necessary to distinguish the historical from the purely chronological and cosmical measures in the several Siriadic formulæ exhibited to us as accounts of a series of human events. The purely historical accounts of years might be determined from such monuments as the Yedeh-tashes of Mesopotamia, the Seng-i-deneazes of Central Asia, the Mâtârâ stones of India, the Pagodas, the triphylæan columns and hydromathematical rock-marks and grottos of China, Japan, and the islands, the Irminsauls, the Cromlechs, and the Round Towers of Europe and Africa, and the monuments of Egypt and America. These monuments furnish the only documents within our reach for the compilation of an authentic history of the human race. It is a book which is to be written by the combined labours of the philosopher, the astronomer, the geologist, the engineer, and the statesman. The telescope, the spirit-level, and the measuring-rod must unite with the pen to write the history of man. The works of historians of all nations, and perhaps the more valuable fables in vogue in all countries, are not to be neglected. We may remain uninformed concerning the acts of kings and peoples in different periods of monumental history: they are repetitions of the same social phenomena which have agitated nations within the last ten or twenty centuries, viz. the clever schemes of some to arrest progress in intelligence and wealth, and of others to overcome obstacles created against improvement, and the combination of some to punish national crimes against humanity and civilization. But the most instructive history of man is embodied in the monuments erected by his hand; and it is his history of the universe, and of his progress in acquiring knowledge of his Maker by attentively observing His works and by comparing himself with them. The information conveyed by a Siriadic monument being, as it were, wrapped up in its date of construction, historical chronology will be revealed to us by the monuments. Those extensive periods of time claimed by the Indians, the Chaldæans and others, are not of an historical nature, but are the bases of formulæ which they help to identify reciprocally, and to record community of knowledge and intercourse. Thus the Indian Cali-yuga period of 4,383,000 days, being equal to 12,000 Julian years, will be found to record the length of the mean tropical year to minutes, by the formula $\frac{4383000-100}{12000}=365{\cdot}2416\dot{6}\dot{6}$ days. That the design in the choice of that number was really to record the proposition in technical chronology is proved by the same record being effected by the Chaldæan period of 43,200 days; for that number of days being equal to 1200 sacred years of 360 days each, then $\frac{(43200\times365{\cdot}25)-(1200\times3)}{43200}=365{\cdot}2416\dot{6}\dot{6}$ days. But a conjecture may be made that these ancient periods, and others similar to them, were the foundations of certain masonic equations of an astrogeological nature, and in functions of the elevations of the principal mountains marking the countries whose inhabitants claimed those periods. It is possible that the summit of the Triphylæan column erected at the top of a mountain in Japan measured 20,951·6 English feet above a certain oceanic level, and that the column itself measured 57·3637 English feet, dating a certain astronomical epoch, which is probably of a Sothoïcal nature. The scale could be easily determined by researches into the antiquities of the Japanese and the Chinese, by the resolution of the thalassal ordinates and amplitudes of their rivers, by the hypsometry of their principal mountains, and by an attentive consideration of the entertaining stories in vogue among the peasantry of those countries.

I shall close this introduction to the Manethonian lists with a short description of the chronological system received by the

Mahometans, which has been made to form an integral part of the religious canons established by the great Arabian reformer. We shall find that the authors of that system belonged to the same great confraternity of the Sabean school who during thousands of years have received the sacred torch of science from the hands of their predecessors, and transmitted it to their successors, of all races and languages, for the benefit of mankind, ever inculcating love and brotherhood among nations. The system is based on the historical section of the Egyptian column, and has for the commencement of its historical section the same graduation which marks the date of the Hebrew historical section, the epoch of the birth of Abram.

These are the measures of the partial sections in Nile years of the *masonic* ordinate of the Mahometan chronological scheme:—

	Nile years.
From the Hejira *down* to the Birth of Christ the measure assigned is . .	632
From that to the death of Solomon . .	1141
From that to the death of Moses . .	575
From that to the birth of Abram . .	545
From that to the Deluge	1081
From that to the creation of Adam . .	2242
Altogether	6216 N. yrs.

We have indicated in another place the origin and the astrogeological value of the graduation adopted on the Niloscopic column of time for the epoch of the Hejira. It dates 622 Nile years after the epoch assigned to the Nativity of Christ by (Daniel and) the Scythian monk Dionysius Exiguus. Deduct 622 from 6216, and demit the difference 5594 from the graduation of the Hejira. The indication will point to the middle line of the third Sothis period anterior to the Menophrean, and will have the value of 5594 B.H. and of 4972 B.C., confirming and attesting the existence of the most important of human inventions—the universally acknowledged basis for the preservation of the records of slowly acquired human knowledge—the scale of Sothis periods.

The partial sections of the masonic ordinate have values assigned to them which do not correspond with, but differ widely from, their values on the historical column. They involve the records of a series of propositions in technical as well as historical chronology, which I leave to the astronomer and the mathematician to settle. One or two of the masonified data may be the following:—The key number being $(\overline{1141+575+545}-2242)=19$, then $1141+575+545+19=2280$ is the measure of the epoch of the birth of Abram from the epoch of the birth of Christ. On the other hand, $632\times(1141+575+545+1081+2242+19)$ give 3,541,096, which being valued in days, the addition of the sum of (19^2 × seven) + (seven × seven) in days to 3,541,096 days will give ten chiliads of astronomical lunar years, and the astronomical lunar year will measure $354{\cdot}3672$ days $=354^d\ 8^h\ 48'\ 46''{\cdot}08$.

The alphabetical letters prefixed to some of the chapters of the Alcoran may have been inserted to record important dates, realizable by combining the arithmetical numbers and their decimal multiplications represented by the letters. To one of the chapters are prefixed the Arabic letters Alif = 1, Lam = 30, and Mim = 40; to another, Yeh = 10 and Sin = 60. The sum, in Nile years, of $\overline{\text{Alif}\times 1000}+\text{Alif}$, and $\overline{\text{Lam}\times 10}+\text{Lam}$, and Mim, and Yeh × Sin, is 1944, indicating the measure of the epoch of the Hejira from the Medius Ævorum or the Menophrean epoch. But the sum, in Nile years, of Mim × 100, Lam × 10, Alif × 10, and Yeh + Sin, or Lam + Mim, is 4380, or the measure of an Annus Magnus. Now the two products added together and demitted from the epoch of the Hejira will graduate the opening of the Annus Magnus anterior to the one which is now in course of generation,—the great epoch universally adopted for a standard point of reference in all Siriadic monuments which did not comprehend geographical with chronological formulæ in their great masonic equations. In the above formula the date of the Dionysian epoch of the Nativity from the Menophrean epoch of the generation of Sothis will be given by the sum of $\overline{\text{Alif}\times 1000}+\text{Alif},+\overline{\text{Lam}\times 10}+\text{Lam},+\text{Mim},+\frac{44}{2}=1322$, in whole numbers of Nile years.

The Russian mundane epoch is a graduation on the column of time obtained by measuring four chiliads of solar years back from the epoch of the Exodus.

The Greek mundane epoch is a graduation measuring the sum of a chiliad of solar years and twice the date of the birth of Abram anterior to the epoch of the Nativity, and half the interval of time between the birth of Abram and the epoch of the Revelation in Mamre. Thus $\overline{2\times 3280\cdot15}+\frac{75\cdot95}{2}+1000$ $=5598\cdot235$ before the epoch of the Nativity.

The Dioclesian epoch is half the measure of time between the Menophrean and Roman epochs, raised up from the middle point between the 1360th and 1365th lunar years of the Menophrean epoch.

The Constantinopolitan epoch is the 1360th lunar year from the Menophrean epoch.

The authors of the beforementioned formulæ must have been familiarly acquainted with the scope and the design of the Ezekelian formula of the new Altar. It is the description of a Siriadic monument; and its measures are in Nile cubits of the Sothis scale. For the monument was composed of three members: viz. the platform, half a cubit high and 14 cubits square; a base laid on the platform, 4 cubits high and 12 cubits square; a stele, erected on the base, 2 cubits high and a cubit square. A moveable hearth-stone, placed on the stele, was 5 dactyles in thickness. The superior plane of the base was dedicated to the Menophrean epoch; and the superior plane of the platform to the epoch of the generation of the Sothis period anterior to the Menophrean. Now the superior plane of the stele marked the epoch of the destruction of the Temple by Nebuzar-adan; and the superior plane of the hearth-stone the laying of the last stone of the new Temple in the reign of Darius. Four measures of the total masonic altitude (6·5 cubits) demitted from the superior plane of the stele will graduate the opening of the second Annus Magnus anterior to the Menophrean epoch; and eight measures of the altitudes of the two lower members of the monument (4·5 cubits) demitted from the superior plane of the base will graduate the opening of the third Annus Magnus anterior to the Menophrean epoch. But the important date of the laying of the first stone of the Temple by Solomon is recorded in terms of the cubic contents, in solid cubits, in the three members of the monument, and the complementary number Seven, which affixes to the scheme the seal of the Sabeans. For, let the stele have the value of 2 Nile years (a), and the base the value of 576 Nile years (b), and the platform 49 Nile years (c); then $\frac{c}{a}+\frac{b}{a}+\frac{7}{a}=316$ Nile years, which is the retrospective measure of the epoch of the generation of the Menophrean period of Sothis from the epoch of the laying of the first stone by Solomon; but the prospective measure to the expiration of the same period will be denoted by $a(b-a^2)$. But the metric lengths of the three members of Ezekiel's Altar furnish, in terms of the historical dates from the great middle line of years celebrated by Habakkuk, hydraulic ordinates of the most use for the engineering works of the Holy Land, the standard *bench-marks* of which were the pavement of the Sanctuary of the Temple, and the secular high-tide level of the Mediterranean in the latitude of the Sanctuary.

THE ASTROGEOLOGICAL NILE LISTS, IN EGYPTIAN DYNASTIES, OF MANETHO,

or the account of the velocities and the directions of the motions of the solid crust of the earth observed in the Siriadic Nile Observatory during a series of twenty-two political periods in Egyptian history, from Menes the Thinite up to the time of the subversion of the second Persian rule in Egypt by Alexander the son of Philip. The accounts are in current Nile years beginning in estival solstices. The nocta is the standard velocity of the subsidence of the crust of the earth in a mean tropical year; it measures 0·0047803055 of an English foot. 360 noctas make a standard Nile cubit, and 360 Nile years make a cubit measure of time. The cubit of the Sothis scale contains 365 standard noctas.

The Twenty-second Dynasty, of three Persian kings.

	Yrs.	B.C.
3. Darius Codomanus reigned over Egypt four years	4	335·625
2. Aregus, who is Arostes and Arcamus, reigned three years	3	338
1. Ochus II. reigned twenty years over Persia, and twenty-three years over Persia and Egypt	3	341

In this period of 10 years the catadysis did not amount to a nocta.

The Twenty-first Dynasty, of three Sebennyte kings.

3. Nectanebes reigned eighteen years . . .	18	359·625
2. Tachus, who is Teos, reigned two years . .	2	361·625

In the first year of his reign Tachus went through Arabia to meet Artaxerxes-Mnemon, who died in the same year, which was the third year of the 104th Olympic quadriennium, after a reign of forty-three years.

1. Nectanebes reigned eighteen years . . .	18	379·625

In this period of 38 years the measure of the catadysis amounted to 38 noctas.

The Twentieth Dynasty, of four Mendesian kings.

	Yrs.	B.C.
4. Nephorites reigned four months	0·3	379·958
3. Psammuthis reigned one year	1	380·958
2. Achoris reigned thirteen years	13	393·958
1. Nepherites reigned six years	6	399·958

In this period of 20·3 years the catadysis measured 20·3 noctas.

The Nineteenth Dynasty, of a Saïte king.

1. Amyrteus reigned twenty-two years and six months	22·5	422·458

In this period the catadysis measured 6 noctas.

The Eighteenth Dynasty, of eight Persian kings.

8. Darius Nothus reigned fourteen months over Egypt, and seventeen years and ten months more over his own kingdom of Persia	1·167	423·625

In the second year of the reign of Nothus the Persian domination in Egypt was subverted by Amyrteus the Saïte.

7. Sogdianus reigned seven months	0·583	424·208
6. Xerxes reigned two months	0·167	424·375
5. Artaxerxes-Longimanus reigned thirty-three years and eleven months	33·987	458·361

The monument of Khorsabad dates the epoch of the accession of Artaxerxes-Longimanus to the throne of Persia. The first year of his reign is concurrent with the fourth of the pontificate of Eliasib; it was also coeval with the twenty-eighth year of the age of Herodotus. The Halicarnassian requesting the Egyptian priests to formulate a *tarich* or date for the work he was writing, and having completed the twenty-seventh year of his age, it was determined that as 900 lunar years—27 made 873 Nile years ἀπὸ Μενόφρεως, he should date his book and introduce it to the public in the meeting of the 83rd Olympiad, observing that the rock-mark left by the two-thirds of the river's amplitude in the first Nile of the Menophrean epoch, which always promises plentiful crops throughout the Nile valley, had subsided by the geological catadysis to the eighth cubit of the quindecimal scale of the river's amplitude in the Niloscopic chamber in the year of the birth of Herodotus—that level securing abundance only to the lands below Memphis. Consequently $2\frac{\mathrm{XXIV}}{3} - (873^{n} - R^{n} + 27^{n})$ being $= \mathrm{XVI}^{c} - 2^{c} = 10^{c} - 2^{c}$, the retardation R, at the time the formula was constructed, will have measured 116 noctas. Hence the birth of Herodotus will date in B.C. 485, which is the third year of the reign of Xerxes the Great, the date of the formula B.C. 458, and the age of the historian 37, when he read his 'Researches' in an assembly of the 83rd Olympiad. Then Thucydides was old enough to shed tears of emulation. The twenty-sixth year of the reign of Artaxerxes-Longimanus is honoured by the birth of Plato, in the year of the archonship of Apseudes, and by the introduction of the periods of nineteen years by Meton the son of Pausanias.

	Yrs.	B.C.
4. Artabanus reigned, or administered the kingdom during the minority of Longimanus, (or was a rebel satrap of Egypt,) during seven years and seven months	7·583	465·944
3. Xerxes the Great reigned twenty-one years and eight months	21·67	487·614
2. Darius the son of Hystaspes reigned thirty-six years	36·011	523·625

The close of the second Nile year of his reign measured 800 Nile years from the Menophrean epoch. Had the date of his accession to the throne of Cyrus happened to fall two years later, his desire to raise the statue of Sesostris to his epoch, as Ramses II. had done, would have been practicable. The new temple in Jerusalem was completed in the sixth estival solstice of his reign, in B.C. 518·625, exactly 490 Nile years from the date of the foundation of the great temple by Solomon. Designing to invade Europe and to subjugate Greece, the commercial rival of Persia, he deposed his queen, Vashti, who was probably a Greek slave, and had become the channel of foreign intrigue in the Persian court and councils, in the twenty-third year of his reign (the date of that event being twice 'one hundred and seven and twenty' lunar years after the Nabonasarian epoch (=B.C. 500·245), and, about two years after, chose Esther the Hebrew for his queen; and, dismissing his foreign minister in the good old style, he entrusted the finances of the empire to the hands of Mardocai in B.C. 497. Seven years after the elevation of Mardocai, the Greek patriots gave him a signal defeat at Marathon. Twelve years after the battle of Marathon, and in the ninth year of the reign of his successor Xerxes the Great, the land- and sea-forces of the empire were annihilated in one day at Mycale and Platæa. Thirty years after that great event the treaty of Cimon destroyed all traces of Persian influence in the Mediterranean. This Darius, jealous of the growing prosperity of the Mediterranean states, *closed* the canal of Clysma, which had been restored to navigation by the pharaohs of the house of Psammeticus.

1. Cambyses reigned eight years, the three last years being over Egypt and Persia. During his absence in Egypt his authority in Persia was subverted by Smerdis and Pausoutes . 3 yrs. B.C. 526·625

He invaded Egypt in the third summer solstice of the 63rd Olympic quadriennium, about a month after the death of Amasis of (Beni-)Siuph, who had usurped the Saïte throne.

In this period of 104 years and 2 months the catadysis measured 124·3 noctas.

The Seventeenth Dynasty, of six Saïte kings, and the reigns of Amasis and his son.

8. Psammecherites the son of Amasis had not reigned much more than a month after the death of his father Amasis, when Cambyses invaded his kingdom. He continued to administer as vassal of the Persian for about five months, until he was put to death by Cambyses . . . . 0·086 526·711

B.C.

7. Amasis of (Beni-) Siuph reigned rather more than thirty-five years and eleven months 35·914 562·625

Amasis constructed the celebrated monolith shrine, to which he gave the dimensions necessary to record the date of the twenty-first Nile year of his monarchy (commencing at the death of Vaphris) to be 780 Nile years from the Menophrean epoch. From the time Vaphris abdicated until his death nineteen years elapsed. So that the period included between the political event and the date of the great Siriadic monument embraced forty years . . . . . . 19 581·625

6. Vaphris (Haifra) reigned in prosperity twenty-five years . . . . 25 606·625

The first year of his reign is concurrent and coeval with the ninth of Jehoiachim king of Judah, and with the fourth of Nebuchadnezzar the son of Nabupolasar king of Babylon, and with the thirty-fifth of Ancus Martius, and with the third year of the 43rd Olympic quadriennium, in which year Aristocles was archon in Athens. Judah was destroyed in the commencement of the sixteenth year of the reign of Vaphris and of the nineteenth year of the reign of Nebuchadnezzar, at the close of the 730th year of the Menophrean epoch. The work of destruction commenced or was completed twenty months and a half after the close of the eleventh lunar year of the reign of Zedekiah.

5. Psammus reigned six years . . . . 6 612·625

4. Nechao (Necho, Neku) II. reigned eleven years . . . . 11 623·625

In the ninth year of his reign he defeated Josiah at Magdolus (Megiddo), where the king of Judah was mortally wounded, and took Caditis (Couds—Jerusalem) after a short siege, the successor of Josiah, Joachaz, having reigned about a quarter of a year, and deposing him appointed Jehoiaki*m* to be king of Judah. Ne*ch*ao carried Joachaz to Egypt, and *died* shortly after his return to his kingdom.

3. Nechao I. reigned seventeen years . . 17 640·625

He restored to navigation the canal which was led from the Nile at Emsous to the Red Sea, and attempted to connect the two seas by a canal across the isthmus, and after losing 120,000 men in the arduous undertaking was compelled to desist because the work done was found to be filled up by the sand-drifts from the barbarian or eastern side of the isthmus.

	Yrs.	B.C.
2. Nechepsos reigned six years	6	646·625
1. Psammetichus reigned fifty-four years . . .	54	700·625

He besieged Azotus (Ashdod) in the twenty-ninth year of his reign, and took it after a siege of a longer duration than that of Troy.

In this period of 174 years the catadysis measured 150·5 noctas.

The Sixteenth Dynasty, of three Ethiopian kings.

3. Tarcus (Tehrak, Taracus), the third king of the Ethiopian dynasty, reigned eighteen years	18	718·625

The eighth month of the fourth year of the reign of Tarcus marked the close of the fourteenth lunar year of the reign of Hezekiah king of Judah, and fell in the sixth year of Mardoc-empadus the son of Baladan king of Babylon, and in the eleventh of Sennacherib the king of Nineveh.

The Ethiopians, who had conquered Egypt and deprived her military castes of their hereditary privileges, being justly alarmed at the invasion of Judæa by the Assyrians, and foreseeing that Sennacherib their king, after the surrender of Jerusalem, the only fenced city which still held out, would proceed to invade Egypt and find adherents to wrest the kingdom from their hands, declared war against Sennacherib. The Assyrian, leaving a body of troops before Jerusalem, marched with an army of 185,000 men to Egypt to meet Tarcus, who, enlightened by the Sothoïc maxims concerning military matters, waited for the invader in Pelusium with a mixed force, principally composed of Egyptian citizens and artisans. Pelusium was a military post of great strength on account of the impracticable marshes in the midst of which it was established, and of its being a naval station from which the coast of Syria and Palestine could be menaced, and compelled invaders from Syria to reduce it before they could with safety march into Egypt. Sennacherib therefore besieged Pelusium, and had already sat before it about two years, when rumours, true or false, of a conspiracy against his life and throne in his own dominions reaching him, he suddenly raised the siege, and abandoning his conquests and his army to the mercies of hostile tribes in dreary deserts, hastened to his capital. He dwelt in Nineveh about four years; "and it came to pass, as he was worshipping in the house of Nisroch his god, that Adrammelech and Sharezer his sons smote him with the sword: and they escaped into the land of Armenia. And Esarhaddon his son reigned in his stead," in B.C. 708·625, and reigned twenty years.

The discomfiture of the Assyrians being due principally to the marshy nature of the district surrounding Pelusium and to the wisdom of the traditions which had guided the policy of the king,—Tarcus, in commemoration of the event which delivered Egypt and Syria from a common enemy, caused the fillet grasped in the left hand of the colossal statue in rose granite erected by Rapsaces (Rab-shakeh) the successor of Ramses I. in the temple of Memphis to be converted into the semblance of the Viverra-ichneumon—the symbol of those low, boggy lands which pervade the maritime districts of the Delta. That monument may be seen, in the middle of the Birkeh of Metraheny, which is the site of the Sothis temple of Memphis, about 290 yards to the north of the monument in white stone of Sesostris.

	Yrs.	B.C.
2. Sebichus (Seveh, So) reigned fourteen years .	14	732·625

The first year of the reign of Sebichus is concurrent with the last year of the reign of Pekah the predecessor of Hoshea the king of Israel in Samaria, and the thirteenth of Ahaz the king of Judah, and the twenty-sixth of Baladan, who is Tiglath-pileser king of Babylon. As the last three years of Menahem king of Samaria are contemporary with the first three years of the reign of Baladan, Pul may be another name for Baladan. The epoch of the fall of Samaria in the Menophrean period of Sothis is graduated by the Hebrew historian of the Second Book of Kings in the following manner: the Sabean divides the reign of Ahaz into three sections, by making the close of the eleventh year of Ahaz to graduate the beginning of the reign of Hoshea, while its true graduation is the close of the thirteenth year of Ahaz: the uppermost section has the value of three Nile years (a), the central of two (b), and the lowermost of eleven tropical years (c). The retrospective measure from the date of the fall of Samaria to the Menophrean epoch is $(a^4 7) + a\,c = 600$, and its prospective measure to the close of the period is $(a+b)^3 7 - a\,(a+b) = 860$ tropical years. The date corresponds to B.C. 721·625, which is a year prior to the death of Baladan and the accession of his son (more probably *brother*) to the throne of Babylon. These things being considered, it becomes apparent that the pharaoh So to whom Hoshea paid court was Sebichus. The numerous dislocations and numerical discrepancies to be met with in the parallel accounts of years of the kings of Jerusalem and Samaria, in almost all the reigns, are not mistakes, but a series of beautiful chronological formulæ, which, if they be worked out through the series, will give the exact lengths of the reigns. The predecessor of Jotham was, in health, Azariah during forty-one lunar years, and Uzziah when he became a leper eleven years until his death, his son governing during his malady.

	Yrs.	B.C.
1. Sabacon reigned eight years after he conquered Egypt	8	740·625

He took Bochchoris captive and burnt him alive—a cruel mode of vengeance practised by the Ethiopians even to our time.

In this period of 40 years the catadysis measured 40 noctas.

The Fifteenth Dynasty of one Saïte king.

1. Bochchoris the Saïte reigned six years . . 6 746·625

In the seventh Salib (Cross, or the equinox of autumn) of the reign of Bochchoris, Aries, becoming vocal, announced that he then occupied the place which had been occupied by Libra in the Salib of the year in which the vocal monument at Thebes was erected, and that the measure in days which then separated him from Libra was the difference between the number of days in twenty-two generations of years of seasons, and the number of days in twenty-two generations of years of 365 days.

In this period of 6 years the catadysis measured 6 noctas.

The Fourteenth Dynasty, of three Tanite kings. It is the Dynasty of the three great *eras* of antiquity in the Western world.

	Yrs.	B.C.
3. Psamus reigned ten years . . . . , . .	10	756·625

Manetho makes his reign to close in the Nabonasarian epoch.

2. Osorcho, whom the Egyptians call Hercules, reigned eight years	8	764·625
1. Petoubates, the founder of the dynasty, reigned forty years	40	804·625

The close of the twenty-eighth Nile year of his reign is the epoch of the establishment of the Olympic quadriennial periods by Iphitus, Manetho having marked that graduation in the reign of the king in the place of the sum.

In this period of 58 years the catadysis measured 58 noctas.

The Thirteenth Dynasty, of seven Bubastite kings.

				Noctas.
7. Psuseunes, in whose reign the catadyses measured .				14
6. Psinaches	,,	,,	,,	9
5. Osochor	,,	,,	,,	6
4. Amenophthis	,,	,,	,,	9
3. Nephelcheres	,,	,,	,,	4
2. Psusenès	,,	,,	,,	46
1. Smendes (Osymandies ?)		,,	,,	26

In this period of 130 years the catadysis Yrs. B.C.
measured 114 noctas . . . . 130 934·625

These astrogeological Nile lists were originally drawn up in two columns of figures. In one of them the regnal durations in Nile years were entered, and opposite to them, in the other column, the measures of the observed motions in noctas. The sum of years in each period was written under it in the column of years, and the sum of the cataclysmal motions in noctas in the column dedicated to the motions. Afterwards, the column of the motions was omitted from the lists and the sums of noctas substituted in the place of the sums of years. This method has been inverted in the thirteenth dynasty. This difference was introduced in order that the nature of the lists should be discoverable by no man from the mere study of them, but was calculated to furnish a strong proof of its meaning should the origin of the lists be ever discovered in the only field it could possibly be found, viz. in the monuments of the work of man and of nature.

The Twelfth Dynasty, of three Tanite kings.

3. Tacelothis reigned thirteen years . ; . . 13 947·625

In his time the catadysis measured 13 noctas.

2. Osorthon reigned fifteen years . . . . . . 15 962·625

In his time the catadysis measured 40 noctas, the acceleration in depression of the crust of the earth in three different periods amounting to 25 noctas.

1. Sesonchis reigned twenty-one years . . . 21 983·625

In his time the catadysis measured 63 noctas, the acceleration in the depression of the crust of the earth in three different periods amounting to 42 noctas. Sesonchis took and plundered Jerusalem in the sixteenth year of his reign, in B.C. 968·21, and *in* the fifth lunar year of the reign of Rehoboam the king of Judah, the close of the fourth lunar year of Rehoboam being B.C. 968·295, and of the fifteenth year of Sesonchis B.C. 968·625.

In this period of 49 years the catadysis amounted to 116 noctas.

The Eleventh Dynasty, of twenty-three Diospolite kings.

Yrs. B.C.

23. Ramses VIII. . . . . 3 986·625

The post-Menophrean period of volcanic ecpyrosis, which lasted without intermission 131 years, and terminated in the third year before the extinction of the house of Amos the Diospolitan, commenced in the close of the sixtieth year of the reign of Ramses II.

22. Ramses VII.

21. Ramses VI.

20. Ramses V.

19. Ramses IV. . . . . . . 1081·625

He made the pshent in rose granite, and dated it 240 years from the Menophrean epoch, to record the time of his accession to the throne, and placed it on the frustated protean statue of Rapsaces dedicated to Sothis, and erected in the middle of the temple of Ptah in Memphis.

18. Ramses III. reigned thirty-six years . . 131 1117·625

17. Ramses II. (the Great). Manetho assigns sixty years to the reign of Ramses II.; but as it is not probable that ecpyrosis should have commenced in the close of his reign, it is possible that he reigned a year or two longer . . . . 60 1177·625

The hydromathematical rock-marks close to the Tower of Semneh, which was stationed on the meridian of the Hypogæum of the first Haran of Memphis, are dated in the close of the fifteenth Nile year of his reign, and recorded to correspond with the close of the 159th Nile year of the Menophrean epoch (B.C. 1321·625–159 = B.C. 1162·625). He also raised the colossal statue of Sesostris which was erected in front of the southern side of the temenos of the temple of Ptah in Memphis, and successfully rehidrymatized it to the maximum flood-level of the Nile of the first summer solstice of his reign, in its original hydrogeological station.

The statue of Sesostris, now a monument of Ramses II., is the colossus in white stone known as the discovery of Caviglia, and near the village of Metraheny. The foundation on which it had been erected by Ramses II. was discovered in Leonard Horner's geochronological researches in A.D. 1854.

	Yrs.	B.C.
16. Ammenemnes reigned five years . . .	5	1182·625
15. Thuoris reigned seven years	7	1189·625

He is called by Homer Polybus, the husband of Alcandra. The seventh year of his reign was concurrent with the first year of the epoch of the fall of Ilion.

14. Ammenephthes reigned twenty years . .	20	1209·625
13. Rapsaces reigned sixty-one years . . .	61	1270·625

He constructed a colossal statue of himself in rose granite, and, investing it with a protean character, dedicated it to the scale of Sothoïc periods, and erected it in the temple of Ptah in Memphis. This monument dated ninety-one years and a quarter retrospectively to the Menophrean epoch, and corresponds to B.C. 1230·375, and to the forty-first year of the reign of the king.

About 518 years after the erection of this monument, Tarcus the Ethiopian fashioned the fillet or purse, represented to be held in the left hand of the statue, into the image of the Viverra ichneumon, in commemoration of the signal discomfiture of Sennacherib before Pelusium, an animal which is symbolical of the marshy districts on the seabord of the Delta, to which Pelusium, one of the strongholds of the kingdom, owed its strength, and, in gratitude to the Arionic policy of dealing with tyrants and to those who propounded the military maxims for the defence of Egypt against foreign invasions, preserved in the Sothoïcal writings deposited in the temple of Ptah. The Hebrew historians, in their narrative of the leading events in the reign of Hezekiah, masonified their knowledge of the origin and the incidents attaching to the Memphis monument by assigning to the chief among the Assyrian generals the name of the Diospolitan pharaoh who erected the monument.

Yrs. B.C.

12. Ramses I. He reigned seventy-one years 71 1341·625

The twenty-first summer solstice of the reign of Ramses I. marked the close and the opening of the Annus Magnus composed of 4380 Sidereal years, and formed the celebrated Helio-isiac epoch, which took place in the summer solstice, when the Nile commences to rise in the latitude of Memphis, and the Nile year commenced with the month of Thoth or Sothis, the first month of the Egyptian civil year of 365 days. It is the Medius Ævorum of Habakkuk, the epoch of Menophres of Theon, and the Menestheuan epoch of Demetrius Phalereus. It is the great middle line of time which vivificates the chronological and masonic formulæ of the prophets and chronographers of all nations. It has been rendered memorable by the liberation of the Israelites from their bondage under the Midianites by Gideon, having been made to occur in the very night preceding the first reflection of the image of the star Sothis in the bosom of the Nile in the Observatory of Zeus Sinopites near Memphis just at sunrise, and by the first celebration of the Sothoïcal mysteries in Eleusis by Eumolpus the son of Musæus, and the institution of the Isthmian games. This celebrated epoch dated 1321·625 Nile years anterior to the epoch assigned to the Nativity of Christ, said to have been first adopted by Dionysius Exiguus, a Scythian monk who flourished some six centuries after the event, and 1324·05 Nile years anterior to the epoch assigned to the Nativity by Daniel, which was probably the first reflection of the image of Sothis in the well or pool of Bethlehem. Ramses I. acquired the title of Sothis in the twenty-first year of his reign. It would appear that some great monument, dated at the close of the first year of his reign, gave him the surname of Amenophath.

11. Armesses or Armaïs reigned five years . 5 1346·625

He is probably the Nilus or Nileus of Dicæarchus, although the number of years assigned by that chronologist to his date anterior to the Olympic epoch is applicable to a later pharaoh. There is some ground for a conjecture that the existing Nilotic column of records in the Roda Niloscope was erected by Armesses, and dated the third year of his reign, and that the nature of the monument acquired to him the cognomen of Nileus; for the shaft of the graduated octagonal column being the third part of the constant Osirtasic ordinate of the Niloscope, and the vertical thickness of the elliptical disc or stereobate in a single block of stone measuring the eighth part of the altitude of the shaft, the inferior and horizontal plane of the disc graduated the epoch of the generation of the fourth Sothis period anterior to the Menophrean epoch, in the third year of the reign of the king, when its prospective date to the close of the Annus Magnus measured about 22 years 9·75 months.

In A.D. 714–15, Suleyman the son of Abd-el-Melek the son of Merwan, having thoroughly repaired and rehidrymatized the Roda Niloscopic chamber with the aid of the records of the balance of accounts of Nekr and Munkr, and of the measure of the settlement suffered by the building from exposure of its masonry to the strong current of the river, raised the elliptical disc 813·64 noctas, and making its superior and horizontal plane to graduate the epoch of the generation of the third Sothis period anterior to the Menophrean epoch, he placed on the disc a base-stone (an inverted capital) having a Sabean cubit, or 420 noctas, in vertical dimension, and erected on the base-stone an octagonal shaft composed of as much of the original shaft as could be used, and an additional section, so that the shaft exceeded in height by 589·16 noctas its original height, and adjusted the summit of the shaft to the close of the 944th Nile year from the Menophrean epoch.

	Yrs.	B.C.
10. Acherrhes reigned twelve years	12	1358·625
9. Chebres reigned twelve years	12	1370·625
8. Rathos reigned six years	6	1376·625
7. Acherrhes reigned thirty-two years . .	32	1408·625
6. Horus reigned thirty-seven years . . .	37	1445·625
5. Tuthmosis reigned forty years	40	1485·625

He erected the vocal statue in the plain of Thebes, dating it in the seventy-fourth summer solstice of his reign, and acquired the surname of Amenophis.

Yrs. B.C.

4. Misaphris reigned thirty-nine years . . 39 1524·625

He erected the colossal statue in the plain of Thebes, to which Tuthmosis afterwards made his monument a companion, in the twenty-third summer solstice of his reign, and acquired the title of Misphragmathosis.

3. Amersis reigned twenty-two years . . . 22 1546·625

2. Chebros. He reigned in Egypt twenty-four years, and in Athens twenty-six years . 24 1570·625

The Israelites conducted by Joshua passed Jordan in the tenth month of the second Nile year of the reign of Chebros in Egypt.

1. Amos. Amos, the Diospolitan, having expelled the Eastern Shepherd kings, became pharaoh, and reigned thirty-eight Nile years 38 1608·625

The Exodus of the Israelites took place in the close of the first year of his reign, in B.C. 1607·625. In the twenty-fifth year of his reign a period of ecpyrosis which lasted 694 years obtained its wending-point and constituted a memorable epoch, and acquired to Amos the title of Amenephthis.

In this period of 625 years the catadysis measured 476 noctas.

The growth of the Reed in the Sarapidan Observatory during this dynastic period, from the wending-point of the ante-Menophrean ecpyrosal period, continued without interruption 466 Nile years (=480·412 lunar years), during which period of cataclysm there was an acceleration of 6 noctas. The cataclysmal period was followed by another period of ecpyrosis, in which the velocity of the upheaval of the crust of the earth did not appreciably differ from the mean velocity of the subsidence of the zone of the earth in which the volcanic forces were lodged, during 131 years. The wending-point of this ecpyrosal period was followed by considerable accelerations in the catadysis. Hence the section of the blossoming rod between the graduations of B.C. 1583 and B.C. 986 measured 472 noctas, grown with the velocity of 480 lunar years. Consequently the date of the Temple of Solomon, which was 600 Nile years after the Exodus, measured 480 lunar years on the geochronological column. And this has been recorded in the Book of Kings.

The Tenth Dynasty of eleven Phœnician (Philistine ?) kings, who took Memphis.

	Yrs.	B.C.
During the reigns of the last five kings of this dynasty the Memphis Niloscope indicated ecpyrosis which lasted 151 years ($151-x$ years)	151	1759·625
6. Aphobis reigned forty-nine years when the season of ecpyrosis commenced. He reigned $49+x$ years	49	1808·625
5. Archles reigned sixty-one years	61	1869·625
4. Staan reigned fifty years	50	1919·625
3. Pachnan reigned sixty-one years	61	1980·625

Jacob died in the third year, and Joseph in the forty-seventh year of the reign of Pachnan, who was the pharaoh who knew not Joseph.

2. Beon reigned forty-four years	44	2024·625

Jacob was presented to Beon in the thirtieth, and Joseph became minister in the thirteenth, and was sold in Egypt in the commencement of the first year of his reign.

1. Saites (Salatis), the founder of the dynasty, reigned $x+19$ years, the last nineteen years of his reign dating from the establishment of the cataclysmal season	19	2043·625

Joseph was born in the seventeenth year before the close of the reign of Saites, and in the eighty-fourth year of the age of Jacob. These were the Eastern Shepherds who, having been permitted to cross over to the west of the Nile valley, increased in wealth and numbers, and built a city (Mansourieh-Nicepolis) in the parallel of the Heliopolitan obelisk, in the Lithroïte nome, and ultimately seized the capital and rendered themselves masters of the whole kingdom.

In this period of 435 years a season of uninterrupted cataclysm prevailed in the first 284 years, until the close of the 49th year of Aphobis. The remaining 151 years, until the complete expulsion of the Eastern Shepherds and the establishment of the second Diospolitan dynasty by Amos, was a season of ecpyrosis.

	Yrs.	B.C.
The Ninth Dynasty of thirty-two Hellenic Shepherd kings, who reigned 518 years $-x$	518	2561·625
The Eighth Dynasty of eight Xoïte kings, who reigned 184 years $+x$	184	2745·625
The Seventh Dynasty of thirty-three Diospolite kings.		
During the reigns of the last 25 kings of this dynasty and an unknown portion of the reign of queen Scemiophris, the Memphis Niloscope indicated ecpyrosis which lasted 453 years	453	3198·625
8. Scemiophris, the sister of Ammenemes, reigned $4+x$ years, the period of ecpyrosis commencing in the close of the fourth year of her reign	4	3202·625
7. Ammenemes reigned eight years	8	3210·625
6. Ammeres reigned eight years	8	3218·625
5. Lachares reigned eleven years	11	3229·625
He was the first who built a tomb for himself in the Labyrinth of the Arsenoïte nome.		
4. Sesostris reigned forty-four years and six months	44·5	3274·125

Sesostris completed the artificial sea of fresh water formed in the summit-level of the central lands of the depression of the Fayoum, and erected in it the Ebgig obelisk, by which gnomon it was recorded that the Osirtasic ordinate to the Mares in the plenitude of its waters measured 70 Nile cubits, and built the two Biamou landmarks. He made a statue of himself in hard white stone, the agalmic height of which measured six times his mortal stature; but its total monumental height measured 30 Egyptian feet. He stationed it on the left side of the southern porch of egress from the temple of Ptah in Memphis, and hidrymatized it to a point of the river's course, in the direction of a Sarapidan observatory on the eastern bank of the Nile (at

Helwan), which had an Osirtasic ordinate of 50 Nile cubits. Sesostris conquered all Asia in nine years, and Europe as far as Thrace, everywhere recording his progress, his conquests, and his treaties in inscriptions on rocks and in autochronous monoliths in the form of obelisks and stelæ. His chronological stature on the masonic column of years happened to measure four Sothoïc cubits and a half in Nile years (=4·5 × 365 Nile years) from the commencement of the reign of Soris. Yrs. B.C.

3. Ammanemes reigned thirty-eight years . 38 3312·125
He was slain by his eunuchs.

2. Ammanemes reigned forty-six years . . 46 3358·125
He erected the celebrated border pillar at the Mâtârâh of Egypt, and made it a satellite to the laddered Haran of Soris. He hidrymatized its plane of date to the middle point of the 237th Nile year of the Annus Magnus, and gave it an Osirtasic ordinate of thirty-eight Nile cubits and a half. It records the secular amplitudes, the Osirtasic ordinates, and the relative levels of the Red Sea and the Mediterranean secular autumnal tides, of the Nile in the Niloscope, and the head of the Delta, and its geographical parallel, and masonifies geodesic data of great importance. Its north-east diagonal produced to the south-west becomes identical with the north-east diagonal of the first pyramid, and the north-east and south-west angles of the shaft at its base are rounded by that diagonal being the prevailing line of the oscillations of earthquakes. The line is nearly coincident with the chain of lakes and oases from Asia Minor to the African Sahrah. Its masonic ordinate is the *tenth* part of the masonic ordinate of the first pyramid. The monument dates B.C. 3329·125, and corresponds with the close of the twenty-ninth year of his reign, when he acquired the title of Geson-goses (Osirtasen?).

1. Ammanemes the father of Geson-goses. He was the founder of the first dynasty of Diospolites. He reigned fifty-nine years and a half . . . . 59·5 3417·625

In this period of 672 years the cataclysmal season prevailed 176 years, having commenced in the forty-third year of Ammanemes I., and lasted without interruption to the fourth year of Scemiophris.

The plutonic upheaval which was observed in the Nile Observatory in the fourth year of Scemiophris continued to act 637 years, when, finding its wending-point, it required 518 years of unsettled seasons ere the unimpeded cataclysmal motion commenced. Consequently the geochronological section on the column assigned by Manetho to the Hellenic Shepherds has been made to overlap the historical section of the Eastern Shepherds and to overlap the Xoïte historical section, or to be overlapped by it,—the historical precision in the case of these dynasties (none of their kings having left any monuments) being sacrificed to make room for a more important record.

	Yrs.	B.C.
The Sixth Dynasty of thirty-one Heracleopolite kings, who reigned 616 years	616	4033·625

The Egyptians being dissatisfied with a popular form of government, the last of their decennial magistrates, Achthoes, a native of Heracleopolis, assumed the imperial power, and established the Heracleopolitan dynasty. Achthoes was killed by a Crocodilopolite.

The Fifth political period lasted 130 years .	130	4163·625

It was occupied by the administrations of thirteen decennial magistrates, the last of whom, Achthoes, was worse than all his predecessors. The Labyrinth in the Arsinoïte nome was constructed by the first twelve magistrates. The seat of government was Memphis. There have been *sixteen* years added to this period by Manetho and by the authors of the Samaritan and Hebrew schemes of the Patriarchal genealogies, in order to base the construction of the scale of Sothis periods on the astrogeological Nile lists. Of that number of years *six* belong to the Heracleopolite dynasty, and *ten* to the reign of Soris.

The Fourth Dynasty of nine Memphite kings.

		Yrs.	B.C.
9.	Obnus reigned thirty-three years	33	4196·625
8.	Tancheres reigned forty-four years	44	4240
7.	Mencheres II. reigned nine years	9	4249·625

He completed the construction of the third pyramid, which had been commenced by Nitocris. The first Sothis period of the Annus Magnus expired in the close of the eighth year of his reign; the king hidrymatized a Siriadic monument to the epoch of the generation of the second Sothis period of the Annus Magnus. It is the middle one of the three smaller monuments to the south of the Nitocris monument. The vertical axis of its chamber (ark) measures one and a half times the measure of its date from the Annus Magnus. He acquired the title of Holy (Pius, Soter, Saviour). He may have been buried in the third pyramid.

		Yrs.	B.C.
6.	Rhathures reigned forty-four years	44	4293
5.	Cheres reigned twenty years	20	4313
4.	Sisires reigned seven years	7	4320
3.	Nephercheres II. reigned twenty years . . .	20	4340
2.	Sephres reigned thirteen years	13	4353
1.	Usercheres reigned twenty-eight years . . .	28	4381

In this period of 218 years the catadysis measured 218 noctas.

The Third Dynasty of six Elephantinite sovereigns.

		Yrs.
6.	Nitocris reigned twelve years	12

She hidrymatized the third pyramid to the first summer solstice of her reign. Of the Siriadic monuments erected in the land of Egypt, hers was considered to be the richest in scientific records and the most perfect; it was also the most beautiful from its high ornamentation, being of a ruddy complexion from its exterior revetment of polished granite from Assouan. The vertical axis of its chamber measures twice its date from the close of the sixtieth year of the Annus Magnus. It is the third Haran, or geographical monument.

		Yrs.
5.	Menthesuphis reigned one year	1

Yrs.

4. Methesuphis reigned ninety-four years . . 94

3. Phiops reigned seven years 7

2. Phius reigned fifty-three years 53

1. Othoes, who was killed by his guards, reigned thirty years 30

In this period of 197 years the catadysis measured 203 noctas.

The Second Dynasty of seventeen Memphite kings.

17. Thampthis reigned nine years 9

16. Sebercheres reigned seven years . . . 7

15. Bicheres reigned twenty-two years . . 22

14. Rhatœses reigned twenty-five years . . 25

13. Mencheres I. reigned sixty-three years . 63

He is the Mycerinus of modern writers. He hidrymatized the second Haran to the first summer solstice of his reign. The vertical axis of its chamber is five times its date from the close of the sixtieth year of the Annus Magnus.

12. Suphis II. reigned sixty-six years . . 66

He continued the work of constructing the first Haran. He hidrymatized the Sphinx to the fifty-eighth year of his reign, and dedicated it to the record of the epoch of the regeneration of the great luni-solar cycle of fifteen periods of 532 Nile years. Its Osirtasic ordinate measured forty-four Nile cubits and eight dactyles; the measure from the maximum of the Nile, in the direction the head looks (to the east), to the foot of the altar between its paws, also measured forty-four cubits and eight dactyles, and an equal measure from the foot of the altar to the plane of frustation across its forehead. Thus from the Red-Sea datum level the vertical measure up to the plane of frustation, in the epoch of hidrymatization, comprehended six measures of the luni-solar cycle.

11. Suphis I. reigned sixty-three years . . 63

He commenced the masonry of the first Haran, and made the vertical axis of its chamber (the Upper chamber) *five* times the date of the first summer solstice of his reign above the close of the sixtieth year of the Annus Magnus.

Yrs. B.C.

10. Soris (Osiris) reigned thirty-nine years . 39 4872·625

He executed the works preparatory to the construction of the first Haran, which Herodotus states to have been built by Cheops (Suphis-Shoufou-Shafra-Chouphou), and excavated in the rock the subterranean galleries, the hypogæum, and the syringe in the hypogæum. He spent ten years in the construction of a magnificent causeway leading from the valley up to the surface of the plateau of the Libyan desert on which the monument was to be raised. The Egyptian mathematicians made the syringe thirty Nile cubits in length (30°), and hidrymatized its floor, which is horizontal, and was on the meridian, to the vertical altitude of sixty-eight cubits, eight dactyles, and six noctas above the secular ebb-level of the Erythræan Sea at Clysma in the autumnal equinoxes,—the Osirtasic ordinate on the parallel of the southern wall of the hypogæum measuring forty-four cubits (44°), and the secular amplitude of the Nile, on the same ordinate, fifteen cubits and one dactyle (15° 2′ 30″); and dated it, on the scale of Sothis periods in the hypogæum, retrospectively $778{\cdot}9\dot{4}\dot{4}$ years to the close of the sixtieth year of the Annus Magnus, and prospectively $3541{\cdot}0\dot{5}\dot{5}$ years to the epoch of the generation of the second Annus Magnus. The monument dates B.C. 4862·68, and the commencement of the reign of Soris.

At the date of the Hypogæum, the masonic altitude of the Haran from the sea-level up to its aërial apex measured 152766 noctas, and was equal to 400 geodesic cubits of 72 millions to the equatorial circumference of the earth; and a side of the quadrilateral platform of rock on which the edifice is built measured the sum of the masonic altitude *and* nine times the difference between the three hundred and sixtieth part of the difference in level between the floor of the syringe and the secular maximum flood-level of the Nile *and* the historical altitude of Suphis I. from the close of the sixtieth year of the Annus Magnus. Thus:

$$152766+\left[9\times\left(808-\frac{68^{C}\,8^{D}\,6^{N}-44^{C}}{360}\right)\right]=159818{\cdot}85 \text{ noctas,—}$$

the number 9 being that of the monoliths covering the sanctuary—'the number dedicated to the gods,' or the square of the number (3) dedicated to God. (See p. 77.) But the side of the first course of masonry laid on the rock-platform measured less than the side of the platform by *five* times the difference between the date of the hypogæum from the close of the sixtieth year of the Annus Magnus, and half the three hundred and sixtieth part of the difference in level between the floor of the syringe and the secular flood-level of the Nile, diminished by the three hundred and sixtieth part of the altitude of the floor of the syringe above the sea-level. Thus:

$$159818{\cdot}85 - \left[\left(5 \times 778{\cdot}94 - \frac{24{\cdot}35}{2}\right) - \frac{68^{C}\,8^{D}\,6^{N}}{360}\right] = 156053{\cdot}35$$

noctas. The number 5 is the cosmical number recorded in the grooves of the antechamber to the sanctuary and in the courses of masonry in the walls of the sanctuary. The square root of the three-fifths of the difference between the length of the side of the rock-platform and *twice* the measure deducted from it to obtain the length of a side of the first course of masonry on the platform, gives the measure of the proportion of the polar compression to the equatorial diameter. Thus the equatorial diameter will be to the polar axis as

$$\sqrt{\frac{3 \times (159818{\cdot}85 - 2 \times 3765{\cdot}49)}{5}} = 302{\cdot}2 : 301{\cdot}2.$$

Consequently the equatorial diameter will measure 8752847053·3, and the polar axis 8723890885·9 noctas.

Let θ be the Osirtasic ordinate, 44 cubits = 44°.

α . . the secular amplitude of the river, 15 cubits and 1 dactyle = 15° 2′ 30″.

ς . . the double of the length of the syringe, or the measure from the floor of the syringe to the base-line of the rock-platform, the thickness of the platform being equal to the height of the ceiling of the hypogæum above the floor of the syringe.

ω . . the cosmical number, 5°.

Then at the date of the hypogæum, the Ezekelian chariot rolling from the equator on the meridian of the syringe had to describe $\theta + \frac{\varsigma}{60} - \alpha, = 29° 57' 30''$ north, to obtain the parallel of the hypogæum; and continuing to the lat. θ north, the chariot had to run $\frac{\omega\varsigma+\omega}{2}$, $=152^\circ\ 30'$ west, to reach a geographical station marked by three natural Harans on the plateau bordering the west side of a valley; and $\varsigma-\frac{\varsigma+\omega}{2}$, $=27^\circ\ 30'$ to the east, from the meridian of the syringe on the lat. θ south, to obtain the antipodal point of the same geographical station. This Siriadic monument masonifies information which would fill volumes. Manetho states that Suphis wrote a book which was considered by the Egyptians of great importance. He disseminated knowledge, and offended the priesthood, who thought him to be arrogant towards the gods.

	Yrs.	B.C.
9. Cerpheres reigned twenty-six years . .	26	4898·625
8. Sephuris reigned thirty years	30	4928
7. Aches reigned forty-two years	42	4970
6. Tosertasis reigned nineteen years . . .	19	4989
5. Soyphis reigned sixteen years	16	5005
4. Mesochris reigned seventeen years . . .	17	5022
3. Tyris reigned seven years	7	5029
2. Tosorthrus reigned twenty-nine years . .	29	5058

He was called Asclepius by the Egyptians for his medical knowledge. He built a college in hard stone (granite, basalt, alabaster, hard marbles) for the study of the medical sciences, and greatly patronized literature.

1. Necherophes reigned twenty-eight years .	28	5086

In his time the Libyans revolted; but on account of the event of an eclipse of the moon, predicted to them by the Egyptian commanders sent to reduce them to obedience, they submitted through fear.

The First Dynasty of seventeen Thinite kings.

17. Cheneres reigned twenty-eight years . .	28	5114·625
16. Sesochris reigned thirty-nine years and six months	39·5	5154·125

His height on the masonic column of years happened to measure five cubits and three palms of the Sothis scale above the epoch of the generation of the fourth Sothis period anterior to the Menophrean epoch.

15. Nephercheres reigned thirty-five years and six months . . . . Yrs. 35·5 B.C. 5189·625

His chronological stature on the masonic column of years happened to measure five cubits and three palms of the Sothis scale above the epoch of the generation of the Sothis period anterior to the Annus Magnus which closed in the epoch of the generation of the Menophrean period of Sothis. The number 5·5 × 2, consecrated by Manetho in his valuable annotations to Sesochris and Nephercheres, is of great importance in connexion with the talismanic number 200 × 2 of the first Haran for the solution of the series of astronomical formulæ masonified in that monument. It is also commemorative of the most advantageous height of the annual floods of the Nile for agricultural purposes, Egypt enjoying the blessings of an additional crop when the river obtains in the autumnal equinox $\frac{11\times2}{24}$ths of the quatuorvicesimal subdivision (denominated *cubits* in Niloscopic phraseology) of its secular amplitude, and retains that level for about a fortnight, the islands and the shores and higher deposits close to the river maturing their crops, while the area of the valley lies under the pressure of about nine feet of inundation-water about the space of one hundred days. The river is then said to have really flowed with milk and honey.

14. Chœres reigned seventeen years . . . 17 5206
13. Sethenes reigned forty-one years . . . 41 5247
12. Tlas reigned seventeen years. 17 5264
11. Binothris reigned forty-seven years . . 47 5311·625

In his time it was determined that women might hold the imperial government.

10. Cœechos reigned thirty-nine years . . . . 39 5350·625

Under him the Egyptians instituted universal exhibitions of cattle, in which the state awarded honours and emoluments on those who competed with success in producing by art cattle possessing certain required qualities and natural marks. It is probable that an Apis period was a cycle of twenty-five Egyptian civil years of 365 days, and that it was established during the second year of the reign of the king, in B.C. 5349·44, the competition for oxen taking place in Memphis. The Mnevis period was a cycle of 25 lunar years of 354 days, and will have been established during the third year of the reign of the king, in B.C. 5348·117, when the first exhibition of kine was held in Heliopolis. But the Tragian periods were cycles of 25 sacred years of 360 days, the first being established in the seventh year of the reign of the king, in B.C. 5342·778, the periodical exhibitions of goats being held in Mendes.

Yrs. B.C.

9. Boethus reigned thirty-eight years . . . 38 5388·625

During his reign the pressure of inundation over the eastern valley having breached the transverse embankment of earth which stretches from the longitudinal dike on the right bank of the Phatnitic branch of the Nile across the valley to the high desert ground to the north of the land of Goshen, many persons perished in the maritime nomes to the north of it. Homer flourished forty-five centuries later than Boethus; and in our time the distance from the Isle of Pharos, by sea or by canal, to the Nile-land is a day's sail, as it was more than twenty-seven centuries ago. It is now more than seventy-two centuries since the time of Boethus, and the topographical features of that part of Egypt continue to be the same, similar calamities befalling the inhabitants of the Dakahlieh should the embankment of Benha and Zagazig give way under a pressure of water.

8. Bienaches the son of Semempses reigned twenty-six years 26 5414

7. Semempses the son of Miebidus reigned eighteen years 18 5432

In his time a terrible pestilence afflicted Egypt.

6. Miebidus the son of Usaphœdus reigned twenty-six years 26 5458

5. Usaphœdus the son of Venephes reigned twenty years 20 5478

4. Venephes the son of Cencenus reigned twenty-three years 23 5501

In his time a great plague raged through Egypt, and he raised the pyramidal mounds of the dead.

	Yrs.	B.C.
3. Cencenus the son of Athosis reigned thirty-one years	31	5532
2. Athothis the son of Menes reigned fifty-seven years	57	5589

He built the palaces at Memphis and left the anatomical books; for he was a physician.

1. Menes reigned sixty-two years	62	5651·625

He was a man of This, a town in Upper Egypt. In his time Egyptian government and civilization extended up the Nile valley as far as those latitudes in which the hippopotamus dwells.

In this period of 565 years the catadysis of the crust of the earth measured 555 noctas.

The Dynasty of the Demigods.

1. The first of the Egyptian kings was Hephæstus, who reigned 724 years and a half and 24 days.
2. The second was Helius the son of Hephæstus, 86 years.
3. Agathodæmon, 56 years and 10 days.
4. Cronus, 40 years.
5. Osiris and Isis, 36 years and 11 months and 10 days.
6. Typhon, 28 years and 10 days.
7. Proteus, 29 years and 5 months and 6 days.

These seven kings reigned *a thousand and one* years.

8. Orus, the demigod	25 years.
9. Ares	23 ,,
10. Anubis	17 ,,
11. Heracles	15 ,,
12. Apollo	25 ,,
13. Ammon	30 ,,
14. Tithoes	27 ,,
15. Sozus	32 ,,
16. Zeus	20 ,,

These nine demigods reigned *two hundred and fourteen* years.

Altogether *one thousand two hundred and fifteen* years, or *four hundred and thirty-seven thousand and four hundred* days (437,400 days).

Three Sections of the valley—one in the site of the Temple of Ptah in Memphis, the second in Saïse, and the third in Rosetta—showing that there is absolute subsidence of the crust of the earth below the sea-level regarded as constant, and that the site of the Temple of Ptah was inhabited by civilized man at least fifteen centuries before the epoch of Menes the Thinite, whose reign commenced in B.C. 5652.

1. *The Memphis Section.*

About 350 yards to the north of the colossal statue of Metraheny, which is the one in white stone, and bears the insignia of Ramses II., fragments belonging to three colossal statues in Gebel Ahmar stone were found cropping out of the alluvial deposits in the Birkeh—a depression below the general level of the valley, in which the inundation-waters sojourn for several months after they have retired from the valley. This Birkeh is the site of the celebrated temple of Ptah. An excavation was made close to those fragments on the 27th of July 1854, the Nile at that period of the year being practically in the season of its ebb. The waters of the previous inundation, held in suspension by the soil, collecting in the excavation, a sufficient number of buckets and levers—means for raising water well understood by the Arabs—was employed to exhaust the water from the pit. The increasing pressure of water, however, rendered it necessary to sink the excavation as promptly as possible, and to be content with merely observing the soils, their general contents, and to measure their depths from the ground-surface. The following is the section of the excavation, and of a boring made from the bottom of it when the process of digging had ceased to become practicable. The boring-instrument was a conical screw, made with a wide and sharp-edged flange fixed around the stem in a spiral form, and attached to the extremity of a tubular rod, in sections, graduated in feet and inches; so that, by screwing down the instrument to determinate depths, unmixed samples were obtained by drawing up the rod without turning it.

The ground-surface at the excavation of the three colossi ranged 3·6 English feet below the ground-surface contiguous to the platform on which the monument of Ramses II. was erected, and 6·8 feet above the surface of the dromos pavement around that platform at the time it was first put up. The descent from it was through a crust of pure Nile deposit 3·7 feet in thickness, reposing on a bank of rubbish soil of the same composition as the mounds of the ruins of the city of Memphis now surrounding the Birkeh. The excavation was carried 22·4 feet down this bank of rubbish-soil; and an additional depth of 9 feet was examined with the boring-implement. The screw having penetrated to a spring (supposed to lie in a medium of fine sand, in communication with the river, between the upper argillaceous stratum and the surface of a dyke of the valley in process of formation from matter supplied by the upper covering, at a rate equal to that of the geological motions of subsidence), the pit became rapidly inundated when the implement was drawn up, the last sample of soil brought by it, from the depth of 35 feet below the ground-surface of the excavation, being a slightly argillaceous sand abounding in rounded fragments of baked clay.

The main line of current of the river due east of the excavation is distant from it about 3830 yards. The secular amplitude of the river on the Osirtasic ordinate of the Ramessian landmark being 26·168 feet, and the fall during the maximum of the flood of the river along the main line of current from that ordinate to a point due east of the excavation measuring 1·794 foot in a course of 1054 yards, the ground-surface of the excavation will have ranged 6·94 feet below the river's maximum flood-level due east of it, and the locality from which the boring-implement brought up soil containing a great many fragments of the work of man will have stood about 15·7 feet below the secular ebb-level of the Nile in the same latitude.

For the computation of the time which has elapsed since any object of human industry was deposited on the surface of the ground and its subsidence to the depth of, say, 42 feet below the flood-level of the river, there is nothing to indicate that it was not placed on a surface 7 or more feet below, or as much above, the flood-level. Nor is it necessary to shift the mighty river from one side of the valley to the other, nor to permit the object to have sunk into the ground by its own weight, nor to have fallen into some deep well, but simply to suppose that from the time it was in the level of the maximum of the river's flood it had remained undisturbed, and had subsided with the subsidence of the crust of the earth to the depth of 42 feet by A.D. 1853. That vertical measure corresponds with eighty-seven centuries and three-quarters of a century, should the standard velocity of subsidence not have suffered retardation from volcanic agencies. As the Niloscope recorded 11·5 dactyles of retardation in A.D. 1853, the taphral depth in which the fragments were found would have given, for their date, B.C. 5823, or 1447 years anterior to the reign of Menes.

And these are the substructures and objects found in the excavation of the three colossi, the measures to the planes of the substructions and to the localities in which the objects were found being given in English feet from the ground-surface :—

Eng. ft.	
0	Ground-surface of excavation.
5·03	The superior plane of a pavement in two courses of limestone flagging, A.
5·9	Locality of spherical balls in limestone.
7·3	The superior plane of a pit dug in rubbish soil, and filled with clean sand brought from the deserts, B.
7·4	Locality of a small image in bronze.
7·53	Inferior plane of A.
8·28	The superior plane of a single pavement in limestone, C.
8·8	The locality in which bones of large domestic animals were found.
9·56	The inferior plane of C.
*10·416	The superior plane of two cyclopean blocks of hard marble (Seunour marble), D, identical in level with the bed of the sand-pit B, and the superior

Eng. ft.	
	plane of a single pavement in limestone E, extending from the marble blocks D, in a south direction.
11·23	The superior plane of a horizontal floor in cement F, in the south-east of the excavation.
11·33	The inferior plane of E.
11·9	The superior plane of the cover of a water-conduit constructed in hard limestone in sections fitting into each other, and running in a straight line towards Sheikh Fakhry (N.W.W. of the excavation), G.
13·7	The inferior plane of D.
14·4	The inferior plane of G.
15	The locality in which were found the fragment of a small domestic vessel in iron, bones of animals, and round pebbles.
15·9	The summit-level of a heap of squared blocks of limestone, H. One of them had a semicircular side.
18 to 19	Locality of bones of domestic animals, of a lump of ferruginous matter, under the series of nine cement floors.
20	The locality of a circular cover of limestone for some domestic vessel.
21	The superior level of a sand-pit, K, to the north of the heap H.
22·5	The locality of rounded pebbles.
23	The bed of the sand-pit K, identical with the ground-line of the heap H.
24·5	The locality of small crucibles or ointment-pots in baked earth, and of bones of domestic animals, become heavy, hard, and sonorous, and of a black colour.
25	Many shreds of pottery, from the coarsest to the finest, calcined bricks, limestone fragments.
26	The bottom of the excavation, and the locality of a broken hand-mortar of hard limestone, such as is used in our time.

Eng. ft.	
26·5	The locality of a tablet in limestone, bearing an inscription in hieroglyphics.
32·3	The level of the first probing of the ground, the extraction of the boring-rod forcing up to the bottom of the pit a pile of shards of pottery, among which a cut flint and teeth of animals were found.
35	The level of the second probing, the flanges of the screw bringing up fine argillaceous sand of a greenish-grey colour, abounding in small rounded fragments of red pottery.

But these are the measures of the superior planes of the cement-floors, which were nine in number, and laid over each other, having the same quality of soil intervening between them as in the rest of the excavation, viz. rubbish-soil, which is composed of Nile alluvials mixed with that which it would not have contained in its natural state, from being used by man in cities built on, and surrounded by the river's deposits.

11·23.	The superior plane	of the	uppermost	floor;	thickness	¾	of an inch.
11·48.	„	„	second	„	„	¾	„
12·28.	„	„	third	„	„	¾	„
12·82.	„	„	fourth	„	„	¾	„
13·20.	„	„	fifth	„	„	¾	„
13·90.	„	„	sixth	„	„	¾	„
14·30.	„	„	seventh	„	„	2¼	inches.
16·72.	„	„	eighth	„	„	¾	of an inch.
17·17.	„	„	ninth	„	„	¾	„

These floors were composed of lime, brickdust, and small quartz pebbles from the deserts. Such was their hardness, that fractures ran through the pebbles without loosening them. Their form and extent could not be examined for want of time. They appeared to indicate the locality of a reservoir whose bottom had to be raised from time to time to keep it up to a certain level. In the lower ranges of pavements pervading the Birkeh, squares of limestone were discovered, containing portions of deeply cut sculptures and hieroglyphics retaining traces of the mineral paints with which they had been coloured. They looked quite as much weather-worn as the most exposed sculptures on the same kind of material in existing edifices of the second Diospolite dynasty. Some of these sculptures resembled those which are peculiar to Amarna, and belonged to edifices which, probably, were antiquities of the land of Egypt and subjects of speculation to Joseph and to his father Jacob long before the new pavements which have preserved their remnants to our time were laid down.

2. *The Saïse Section.*

The celebrated city of Saïse, 'the adorned,' 'the beautiful,' as its name imports, was built in the delta formed by the Bolbitine branch of the Nile and a canal running from it, which discharged its waters into Lake Broulos, and was named the Saïtic branch. The canal runs close to the east side of an extensive quadrilateral and rectangular enclosure in crude brickwork, which formed the solid rampart of the temenos of magnificent temples and palaces, whose sites are now marked by marshes occupying the northern half of the once sacred area.

The rampart is 20 feet wide at its present summit-level, and ranges 43 feet in altitude above the general level of the alluvial deposits surrounding it, at which level its width is about 50 feet. But its perimeter, measured along the central line of its superior and horizontal plane, has a development of about 2868 yards,—the north section of the quadrilateral, which has suffered less than the three other sections from the weather and the hand of man, measuring 837 yards. It is formed of disconnected cubical blocks of brickwork, in which the courses are slightly curved downwards, and their extremities do not correspond with the extremities of the courses of the blocks contiguous to them,—the dimensions of the bricks in the several blocks varying from 18 to 17·75 inches in length, from 8 to 7·5 inches in breadth, and from 6 to 7 inches in vertical thickness. In some of the blocks the courses are laid upon a matting of rushes, and in others on mortar made of pure alluvial deposit. I did not, however, observe a single instance of a brick which had not been formed of rubbish soil, every one containing traces of calcined brick and pottery fragments.

These walls supply the peasantry of the neighbouring villages with materials which, from their being impregnated with salts and animal matter, are used by them as manure for their lands. They have consequently been cut through in several places. In one of these breaches, which commences about fifty-four yards from the south-west angle of the enclosure, a station was selected to sink a shaft with the object of ascertaining how far the crude brickwork of the rampart extended below the present level of the alluvial deposits of the valley surrounding it. The boring implement was fixed in the centre line of the wall, and in a hollow excavated by the fellahs in the western extremity of the breach. After fifteen hours of continuous labour, having made thirty-eight descents of six inches, the whole depth of the shaft, with the exception of five feet from the twelfth foot of the descent, supplied samples of soil containing red-brick and pottery fragments. The compactness of the soil throughout the shaft was a strong indication that it was carried down a substratum of crude brickwork, no other part of the alluvial soil of the valley of equal depth having required so long a time to be penetrated with the same implement and with the same amount of working power. The first and uppermost section of five feet and a half was a compact brown clayey soil, containing angular fragments of red brick and limestone, with indurated sand-concretions of a dark grey colour. The second section of six feet and a half resembled the first, with the difference that limestone fragments were not detected in the samples. The third section of five feet was composed of a lighter-brown, compact clayey soil, with indurated sand-concretions of a grey colour. The samples of this section offered no visible indications of the presence of the remains of human industry. But in the fourth section of two feet, the samples exhibited large fragments of red brick and indurated sand-concretions of a dark grey colour, cemented together with a little clayey soil, which was compact and light brown in colour, like the soil in the third section.

The south side of the quadrilateral, being produced to the west from the level of the aperture of the shaft, intersected the longitudinal dike forming the right bank of the river during its flood state, at the distance of 1199 yards from the south-west angle of the enclosure, the surface of the valley averaging 5·05 feet below the same level. The Bolbitine branch in this part of its course tends to cave under its left bank, and attains a width of about 426 yards between its eastern and western dikes during its flood state. But at the time of the year in which the operations were undertaken (20th December, 1854) the river, being in the season of its ebb, had fallen 12·27 feet below the water-mark which the torrent of the previous year had left on the western escarpment of the eastern dike, and had formed, in retiring, a bank of alluvial matter, 306 yards in breadth from the eastern dike, which was bearing a promising crop of wheat. As that torrent had obtained the maximum of development, and the highest mark left by it on the dike stood 1 foot below the level of the aperture of the shaft, a rough computation gives to the level penetrated by the poring implement, bringing samples of red brick, the measure of 1·37 foot below the highest level of the Mediterranean tides, and of 2·97 feet above the secular ebb-level of the Red Sea tides. For, the culminating point on the main line of the Nile's current during the maximum development of its annual floods being raised about 1·62 foot above its lateral levels in any transverse section, and the vertical ordinate connecting that point with the lowest ebb of the Red Sea at Clysma measuring about 74 feet in the transverse section at the Rhoda observatory, and the distance from the parallel of that observatory to the parallel of Saïse, measured along the line of strongest current, being 107 miles, and from Saïse down to the locality of the bar of the Bolbitine branch in the maximum of its horizontal projection out to sea measuring 45 miles on the same line of current, the ordinate from the culminating point of the current in the Saïse parallel to the Red-Sea level should measure about 22·6 feet, and the aperture of the shaft should have stood about 0·6 of a foot below the culmination-level. Now, the secular amplitude of the Red-Sea autumnal tides at Clysma measures 9·556 feet, and that of the Mediterranean at Racotis 3·064 feet; while the ebb-level of the latter ranges 1·258 foot above the ebb-level of the Red Sea.

The modern name of Saïse is 'Sa-el-hagar,' meaning 'Sa of the Stone.' It is probable that the affix of 'hagar,' the 'Stone,' is a traditional allusion to the wonderful monument which gave celebrity to the city, not so much from its magnitude, costliness, and beauty, as from its important chronological, scientific, and historical properties as a Siriadic land-mark—the monolith shrine of Amasis, which Herodotus admired more than the other curiosities of Saïse. It is from the dimensions of that monument, which have been fortunately transmitted to us by Herodotus, that we have been enabled to determine that the twenty-first Nile year of the monarchy of Amasis, which commenced on the death of Vaphris, measured 780 years after the Menophrean epoch. The monument was not erected within the enclosure of the temenos, but in a locality in relation to the course of the river where the Osirtasic ordinate measured the sum of the exterior and interior altitudes of the monolith chamber, and the secular amplitude of the Bolbitine branch on the same ordinate measured the sum of 780 noctas and the exterior altitude of the chamber. The monument would appear to have been left by some accident out of the walls of the temple enclosure. It has been destroyed; and no trace of it has been discovered by modern research. The foregoing conjecture is based on an approximate estimate of the present measure of the river's amplitude at Saïse, and is put forth in illustration of the valuable properties of Siriadic monuments in their relations to history and the physical constitution of the valley, the river and the two seas, and the sciences which have for their foundation experience and observation. "These are not fictitious things, but most true and certain." Had we not destroyed the Saïse land-mark which we erected twenty-four centuries ago,—had it remained undisturbed in its original plane of hidrymatization and in a state of preservation, we should now have been able to consult it, and by comparing its present hydraulic indications by careful operations with those we had ascertained and metrically masonified in its dimensions twenty-four centuries ago, we should have determined the changes that may have been at work in the physical constitution of the river, the land, and its two seas, and by repairing to the same oracle, and vocalizing it after the expiration of another period of twenty-four centuries, we should have obtained data of historical value based on forty-eight centuries of observation, and have laid solider foundations, for those who delight in building edifices of theoretical speculation, than those derived from two or three centuries of observation. On the other hand, if we were to compare the cosmical changes which may have taken place during the last sixty-seven centuries with the state of things recorded in the first Haran of Memphis, and invent methods of recording the results in an indestructible manner, we should, at the expiration of a hundred and thirty-four centuries from the date of the Haran, acquire more valuable information in every department of science,—the physical and moral improvement of the human race keeping pace with their gradual progress in knowledge. Monuments in stone and in writings concur in teaching the great lesson that science is the foundation of the happiness of man, that its accumulation and preservation depend on the free and intelligent exercise of the divine faculties intrusted to him by his Maker, that there is no law compelling to progress or to retrogradation, and that he is the absolute master of his destinies.

3. *The Rosetta Section.*

The port town of Rosetta, the T-Rashit of the Copts, is situated on the left bank of the western and the principal branch of the Nile. It is distant three miles from the sea, but six miles by the river to its bar in its ebb season, and from eight to ten miles in its flood period. It is the best-built town in Egypt, the material of construction being calcined brick, and it occupies the northern half of the ancient city of Bolbitine, the ruins of which rise in mounds of considerable extent and elevation to the south. Hundreds of noble columns in granite, breccia, and costly marbles, which are to be seen in the modern town, attest the magnificence of the ancient, and the commercial industry of its population.

In consequence of the decided tendency of the river to flow to the west, little of the site of the ancient city would have remained had it not been for the protection afforded to the left bank by the solid foundations and stone walls of an old Sarapidan monument, the Abou-Mandour of the Arabs, which now project considerably into the channel of the river, bear the brunt of its current, and, aided by the compact argillaceous deposits forming the opposite bank, limit the river to the maximum breadth of 208 yards, with a depth of sounding in their vicinity amounting to 80 feet. Though the width of the river at Geddiyeh, a village about a mile and a half to the south of Abou-Mandour, exceeds 400 yards with a depth of 36 feet, and in front of Fort St. Julien (the Milesian station of old, and the locality in which the celebrated Rosetta stone was discovered), a couple of miles to the north of the town, is 375 yards with a depth of 60 feet, it expands before Rosetta to 638 yards with a depth of 20 feet. The current, after passing Abou-Mandour, bifurcates, and, sweeping under the opposite banks, unites again in its passage in front of Fort St. Julien, and again dividing into two streams, gradually expands in breadth to 730 yards, with a depth of 25 feet in the line of the opposite forts built on the sands to the S.W. and S.E. of the river's bar. These forts cross their fire at the passages through the bar. From that line the soundings gradually diminish until they acquire at low Nile a mean depth, in calm weather and at the mean sea-level, of 66 inches over the eastern, and 90 inches over the western passage. Those measures increase 28 inches at high Nile; and throughout the year, under ordinary circumstances, the above-mentioned soundings are liable to be augmented or diminished 19 inches, half that measure being assigned to the rise or fall of the habitual tide, and the other half to the effects of northerly and southerly winds.

It is the existence of the great expansion of the river in front of Rosetta, and its double current, which have favoured the establishment of a commercial city so near the mouth of the river. For in that locality the main line of current sweeping under the eastern bank, the passage of boats and seagoing craft does not interfere with the line of vessels moored to the western bank along the city. The same peculiarity marks the Phatnitic branch; and the establishment of the second commercial port town, Damietta, is owing to the same favourable circumstances.

The bars are a continuation of the coast-line of the Delta, which is a low and narrow belt of loose sand thrown up by the sea, and has a configuration resulting from the lines of direction of conflicting hydraulic and pneumatic forces; for the Mediterranean current, coming habitually from the northwest, is arrested in its southerly progress by the rocky coast to the west of Aboukir Point, and compels the Nile, which is at first obliged to run out to sea in a north-easterly direction, to turn and to trend down with the sea-current to the southeast, and to deposit the sand and argillaceous matter it holds in suspension to the east of the Bolbitine passages, creating shallows and mud-banks which extend some miles out to sea from the line of coast. The soundings of these shallows, and the localities and extents of the purer argillaceous insulations deposited on them, are subject to variations caused by the periodical fluctuations in the volume of the river, and the directions and intensities of the winds, which, in set epochs of the year, bring about a total change in the habitual direction of the sea-current. In the night of the summer solstice the current suddenly veers round from the west to the east. Thus deeper water is found on the Egyptian coast to the west of the Bolbitine embouchure than in any part to the east of it, which is *tohu* and *bohu* all the way to Arish.

A vessel wafted by the life-giving Etesian winds towards Egypt, after navigating over the 'fathomless' waters of the Mediterranean, may be suddenly entangled in the mazes of the shallows long before the coast is visible. The reflexion of light on the dark blue horizon, from the expanses of sand in the vicinity of the river, are indications of the directions of the Ostea. Having crossed the scene of constant conflict between the sea and the river, the vessel sails up the placid stream between two forests of all sorts of fruit-bearing trees interspersed with gardens and vineyards planted by the hand of man on khemy, the gift of the Nile, which is itself rich in delicious fruit. This paradise, in which wild beasts and poisonous reptiles are unknown, its inhabitants dwelling in scattered tenements, extends to the gates of the sea-port town, where the sciences and arts ministering to commerce and navigation are cultivated. A zone of about thirty miles in width intervenes between the line of coast and the northern margin of the great plain of alluvial deposits which line the stream in its courses through it, and divide it into a series of lakes abounding in all sorts of excellent fish and water-fowl. As the river from the southernmost latitude of the lakes is almost identical with the sea- and lake-level, and is affected by the diurnal tides of the sea, the monsters of the deep often venture up the stream. The great plain is sacred to agriculture; it abounds in all kinds of cattle, in wild beasts from the deserts, and reptiles. Its inhabitants live in compact villages built on eminences formed by their own ruins. The celebrated city of Memphis occupied the middle point of the two continents and the two seas. It was the residence of intelligent man, who owed his preeminence to commerce and industry. Exercising in freedom the faculties imparted to him by his Maker, man has learned the art of making the mighty forces of nature to construct a beautiful place for his dwelling and maintenance with materials created by the Generator of the heavens and of the earth.

A valley without rain, and moistened only with mists arising from it, though it may have been occasionally inundated by its river, was not adapted for tillage. The solid crust of the earth under the Egyptian valley being found to have a motion of subsidence, and the river, flowing down it in a bed of its own making, to maintain a certain inclination with respect to the sea-level, the stream was curbed by dikes, and being suffered to spread its deposits over its valley only by rule and measure, a depression of the surface of the valley below the river's highest flood-levels was gradually procured so as to enable it to be annually inundated at the proper season to a given pressure of water, by floods of minimum magnitudes. When the maximum column of inundation was obtained, it became necessary that the velocities of alluvial colmations over the valley should be so regulated as to keep pace with the variable velocities and directions of the motions of the valley, the velocities of the geological subsidence being liable to suffer perturbations owing to volcanic agencies of a local, temporary nature, varying in intensity. Hence arose the necessity for those continuous and unremitted observations of the ever-varying and complicated relations between the celestial and terrestrial powers, through the agency of the river, which were the origin of monumental landmarks, of monumental dates in the political annals of nations, and of monumental literature in which the results of the experience of man were ingeniously masonified. The Manethonian accounts were Nile lists embracing a period of 5320 years, commencing with B.C. 5652. From the epoch of the conquest of Egypt by Alexander the Great until the Arab invasion conducted by Amer the son of Aas, in A.D. 638, during the space of about 970 years, the series of observations must have been continued under the Greek, Roman, and succeeding administrations. We know with what care the same observations have been carried on during the Mohammedan rule, until the present year, which is the 7513th since the one from which Manetho commenced his history.

The researches in Rosetta were instituted with the object of determining whether the present depths of *pavement* foundations of monuments and of rubbish soils containing fragments of the work of man, and occupying the same levels as those foundations, as well below the present surface of the ground accumulated over them as below the highest flood-levels of the river in their respective parallels, are owing to the subsidence of the solid crust of the earth tending to keep the surface of the valley at invariable altitudes above the sea-level, with colmations of alluvial matter brought by the river, or to the positive additions to the elevation of the surface of the valley above the sea-level by a positive rise of the bed and the depositing level of the river above the same sea-level. There is evidence of the existence of the motions of upheaval and of subsidence in solid strata within the same quarter of the globe. And although the sea-level itself may be rising and depressing in opposite hemispheres, it may be considered to be permanent in the present imperfect form of inquiry; and the whole of the relative motions indicated by the monuments and by the monumental soil may be attributed to the motions of the crust of the earth or to those of the river. The following sections and phenomena demonstrate that the seat of motion is in the solid crust of the earth, that the alluvial and river-levels are permanent, and that it is to these properties that Siriadic monuments owe their efficacy and historical value.

Several shafts were sunk in and in the neighbourhood of Rosetta, which revealed the same general results. Five of them will be described as the most interesting. Of these the *first* was situated in the plain of dark brown and tenacious clayey deposits of the river, dedicated principally to the cultivation of rice: its surface abounded in limnites; and it was situated 610 yards to the south-west of Geddiyeh, a village on the left bank of the river, and distant 19,210 yards from the Western Fort, which is close to the bar. The *second* was distant only 51 yards to the north-west of the first, and was stationed to the right hand of the path leading from Geddiyeh to Edko, and following the skirts of the down district of drifted sands, and separating the plain of alluvial deposits from the area occupied by the sand. The *third* shaft was located 487 yards to the north-west of the second shaft, and situated in a hollow between two parallel ridges of sandhills called 'Alexander's road.' The soil in this and similar series of hollow ground extending to the sea is merely loose sand like that composing the hillocks, which are fixed by lines of palm-branches and reeds stuck close together in lines running at right angles to the directions of the prevailing winds. These hollows are cultivated in vines and vegetables, with water raised from small pits dug in them. The *fourth* was made between the four walls of a ruined tomb of early Mohammedan date, Sheikh Nehar, which has been encroached upon by the sand-hills: it is distant 622 yards from the third shaft, and is situated nearly on the line between it and the village of Geddiyeh, and it is close to the alluvial plane. The *fifth* was made in a low and open space called the 'Hospital Square,' in the town of Rosetta, close to a couple of granite columns, 204 yards distant from the left bank of the river, and 13,180 yards from the Western Fort. These columns stand in their original position, but are now buried up to two-thirds of their altitude by the rising of the soil accumulated by traffic. The inhabitants of Rosetta affirm that those columns supported an alcove over the gateway of a house built in calcined brick, which, being abandoned, had been pulled down, and its materials sent to Alexandria.

According to the statements of the officers of the garrison stationed in the Western Fort near the bar of the river, the highest rise of the extraordinary Niles of 1851 and 1853, which completely isolated the fort by covering the spit of land on the northern extremity of which it is built, reached the surface of the drawbridge in front of the gateway in its southern curtain, during the autumnal equinoxes. The superior plane of the drawbridge was assumed to mark the maximum of the Mediterranean tide-level. The secular amplitude of the tides being 3·064 feet, the ground-surface of the first shaft will have ranged 5·4 feet, that of the second shaft 7·4 feet, that of the third 5·2 feet, that of the fourth (in the tomb of Sheikh Nehar) 16·2 feet, and that of the fifth shaft in Rosetta 4·5 feet above the secular ebb-level of the Mediterranean. The first shaft was sunk twenty feet—the length of the boring implement used in these researches,—the soil throughout that depth continuing to retain the character of its surface, and to exhibit limnites of the same kind as those now living on its surface, to the depth of 14·5 feet below the secular ebb of the Mediterranean. The second shaft, though in the immediate vicinity of the first, preserved its character of drifted sand, with slight admixtures of clayey matter in some of its zones, but free from pure alluvial deposits and limnites, down to the depth of 12·5 feet below the same sea-level. The third shaft was similar to the second, but differing from it in this, that its soil from the tenth to the thirteenth foot in descent contained small rounded pebbles, and fragments of pottery mixed with pebbles in its fourteenth foot. Here the boring implement was met by a compact dark bluish-brown clay, veined with a lighter-brown sandy clay containing particles of red pottery, at the depth of 2·5 feet below the same sea-level. The fourth shaft, commencing in sand and rubbish accumulated in the tomb of Sheikh Nehar, descended through built substructures, and was arrested by a hard stone pavement, about 4 feet above the ebb-level of the sea, and 1·5 foot below the general level of the alluvial plain to the south of the tomb, and distant but a few yards from it. But the fifth shaft constituted a section of twenty feet of soil, generally of a homogeneous character, containing throughout its whole depth abundant fragments of calcined brick and pottery, extending 15·5 feet below the secular ebb-level of the Mediterranean.

The foregoing sections, combined with the phenomena exhibited by the submersion of the catacombs of Alexandria, of the monuments lining the coast from Alexandria to San Pelusium and Faramah, and the most interesting aspect of the Lake Mareotis sections, constitute strong indications that the solid crust of the earth is affected by a positive motion of subsidence. For the catacombs, excavated in a friable limestone-rock of recent formation and easily pervious to water, must have been constructed rather above the range of humidity, and consequently somewhat raised above the level of the sea, which finds its way into the rock, than below that level. Yet many of the catacombs are visible below the sea-level, and some were found with bodies in them several feet below the sea-level, when the foundations of the lock-gates of the Mahmoudieh Canal were recently laid. On the other hand, the area of the Lake Mareotis is now below the sea-level. It is studded with the rubbish mounds, indicating the sites of ancient towns and villages. Under the seawater-level, a bank of sandy clay covers a layer of pure Nile alluvials, reposing on another bank of sandy clay. The layer of alluvials is of considerable thickness, enclosing substructures in limestone. In former times the Egyptians filled the basin of the lake with alluvials brought into it by broad and deep canals, and, raising its surface above the sea-level, kept it raised by systematic operations of colmation, and cultivated it. But since the canals of colmation were suffered to fall to decay, the area has subsided once more below the sea-level. The ruins of ancient buildings and monuments are now found below the sea-level as well along the whole coast as on the borders of the eastern lakes of the Delta.

The theory of the construction of astro-geological landmarks was based on the principle that the directions and the velocities of the motions of the crust of the earth on which they were solidly fixed became measurable by their comparison with river- and sea-levels, which were considered to be constant. The great value imparted to those landmarks was derived from their having been made to masonify their respective dates on a universally adopted scale of great cyclic periods, projected in terms of an invariable metric unit which was of an astro-geological character, and from their having been made to embody the metric values of river and sea ordinates in their respective latitudes and in the epochs of their construction. They were also made to record astronomical, geographical, and geodesical data, in various degrees of accuracy, possessed by men of science in the days of their consecration. They contained also inscriptions, not of foolish titles, but conveying useful information, and specimens of works of human industry, and pictorial representations of the most necessary inventions of life. Now the cyclic periods adopted being those of the Dogstar, such monumental landmarks were designated Siriadic monuments. We find Siriadic properties were given to temples, palaces, colossal statues, images, *letters*, small cylinders, &c., as well as to pyramids and obelisks. But the grandest Siriadic monument of the world is the Egyptian river and its inhabited valley. The monuments stationed in it being in groups of separate constellations, in which the more recent in date are satellites to the oldest, the different groups are satellites to the Memphis

Niloscope, which is the great centre of the Egyptian monumental system. It is probable that the Egyptian system itself was subordinate, with the systems of other nations, to some bright luminary around which they revolved. The earliest seat of civilization may have been some part of Asia, where the human race were exposed to many natural *evils* until they learned by experience and observation to convert *them* to blessings, making the phenomena which for a time served to afflict and to enslave them ultimately to minister to their wants, and to raise them in intelligence and prosperity.

The Roda Niloscope.

This monument is Siriadic, and probably the oldest monument existing in our hemisphere. The Arabs call it "Oum-el-Mekïas," meaning the Mother of Places dedicated to the constant observation of anything by measurements: they also speak of it as "the place in which the growing reed of the river is measured," that being the interpretation of the name given by them to the Niloscope, viz. "Mekïas el rod el Nil," the word "rod" being the Coptic for any vegetating and blossoming reed. For the Niloscope is an hypæthral subterranean chamber of solid masonry, into which the river has free admission throughout the year; and the velocities of the apparent rise of its ebb- and flood-levels up the walls of the chamber being measured and recorded, a column or reed of an astronomical and geological and strictly historical value is supposed to be generating and growing in the Nile. And real columns in hard stone used to be constructed after the true scale from the books of records, the shafts being graduated in dactyles of fifteen years of growth, and the dactyles marked off in palms and cubits. Of course the dactyles, palms, and cubits had not the same measures, though they indicated equal spaces of time in Nile years; and as a cubit division commenced from a graduation indicating the epoch of the generation of a Sothis period, such columns were accurately dated. These were the celebrated Sarapidan columns; and as they were the keys to the monumental landmarks erected in the Nile valley and in many other countries, and also to historical writings, they constituted the most important document of human invention. Additions were made to Sarapidan columns from time to time. These columns, and the monuments and books and inscriptions, furnished to Manetho the materials with which he constructed his book for the use of Ptolemy Philadelphus. It was a history of Egypt; and its chronology was a copy in writing of the measures of Sarapidan columns. Manetho inserted, with much judgment and ability, so many checks in his dynastic lists to obviate the possibility of the original numbers becoming irretrievably lost through accident or design, that the few errors which have crept into the lists have been easily detected; and, with the aid of the great monuments, the sacred writings, and the metric values of the river and seas (ordinates which have not changed appreciably during the last seventy-five centuries), the lists have been restored to their original form, and have realized the synchronisms in Egyptian, Hebrew, and Babylonian histories. This Mekïas should be the Sarapidan monument which was said to be near Memphis, and to be dedicated to Zeus Sinopites. It may be proper to designate it as the Memphis Niloscope in order to distinguish it from simple Nilometers, which are numerous on the banks of the river, and are of local utility during the time of the year when it is rising, and are simply consulted for agricultural purposes, while in the Memphis Niloscope observations are taken every morning at sunrise, and in the cardinal epochs of the year, with the standard Nile cubit, and carefully noted in registers, the metric unit (called the Black cubit, because it is made of ebony-wood) being the same standard Nile cubit, and the method of observation and notation being the same now as determined when the observatory was first established. The point selected for the establishment of the observatory was in 30° 1′ 7″ of north latitude. Its meridian is 28° 59′ 23″ east of Greenwich; but in ancient Egyptian geography it must have been adopted for the first meridian. About eight centuries and a half after the date of the present series of observations, the hypogæum of the first pyramid was fixed 5′ to the west, and about 2′ to the south, of the Niloscope station.

It was situated on the right bank of the river, and had the limestone rock of the Mokattam for its solid foundation. The reason why that spot was chosen is most important: while the van of the annual torrents of the Nile habitually reached the Memphis and Heliopolis parallels in the period of the summer solstice, the secular amplitude of the torrents in the maximum state of development, or the difference between the lowest ebb and the highest flood levels of the river, measured exactly fifteen standard Nile cubits in the parallel of the observatory; and the Osirtasic ordinate of the river in the same parallel, or the vertical supposed to connect the lowest secular ebb of the Erythræan Sea during the autumnal equinoxes at Clysma and the secular maximum flood-level of the Nile in the Niloscopic parallel, measured forty-two cubits and a half of the Sothis scale. The standard Nile cubit was the mean velocity of subsidence in the space of time comprised between 361 summer solstices of mean tropical years; and the cubit of the Sothis scale was either the mean velocity of subsidence in the space of time between 366 summer solstices, or the fourth part of the period taken up by the generation of a Sothis period observed in the same place. The generation of the Sothis period in B.C. 1322 was not the heliacal rise of Sirius, but the first reflexion of the image of the star just before sunrise in the mirror of the Nile in the observatory-chamber. The phenomenon was celebrated because it occurred in the time of the summer solstice, and in the epoch of the natural year when the Nile commences to rise in the parallel of the observatory, and because it completed the first Annus Magnus of Nile records. The Nile year was reckoned from the summer solstice; but the Niloscopic records were drawn up in Nile years, in lunar years, and in sidereal years, simultaneously. On the other hand, the civil year was of twelve months of thirty days and five additional days, or a sacred year and five days. This was the Egyptian year. But in every four Egyptian years a day was added to the five additional days of the fourth sacred year; so that four Egyptian civil years contained 1461 days. But the ninety-first and the hundred and eighty-first quadrienniums contained 1464 days, by the addition of six days to each of the sacred years composing them. And the close of the three hundred and sixty-fifth quadriennium made a Sothis period. But in the termination of three Sothis periods, the Sabeans added seven days to the ten hundred and ninety-fifth quadriennium, by which the first month of the sacred year, Thoth or *Sothis,* was brought round to the generation of a new Annus Magnus, or great trieteris of the "more true sun." The great Niloscopic phenomenon became the greatest of the middle lines of years; and it is probable that the "children of Seth" anticipated it with the same accuracy as their descendants in modern times anticipate eclipses and the return of certain comets and other phenomena of a cyclic nature, and that they dated events as well retrospectively, as we do, as prospectively—a method our art of life has not as yet rendered necessary. For the world was enlightened, and vast stores of knowledge had been accumulated, when a period of ignorance and barbarism set in. It was not by any law of nature that mankind stood high in civilization and afterwards descended to the gloomy region of the savage state, and again resuscitated to improvement, but by the well-known law, that, being created free and intelligent, men will prosper when they continue to cultivate the seeds of all good things provided for their mental and physical nourishment by their Creator, and must retrograde and become poor in mind and body when they cease to labour and desire to be provided for, instead of providing for themselves. The first period of civilization in Egypt embraces about twenty-five centuries from the days of Menes: the monuments of that period are divested of inscriptions and pictorial representations. To that succeeded a period of darkness of about fifteen centuries: it commenced during the first Diospolitan dynasty, shortly after great military expeditions of Sesostris. We know nothing of the Xoïtes, and about as little of the Hellenic Shepherds who conquered Egypt and had their own way, as their successors the Tartars, during five centuries. Five centuries alone are abundant time to advance mankind to much perfection in the path of progress, or to make them retrograde from an enlightened condition to a state akin to that of the brute. It is probable that Egyptian civilization commenced to revive during the domination of the Eastern Shepherds. The establishment of the second dynasty of Diospolitans was the beginning of a new period of civilization, and lasted about eleven centuries, until the first Persian invasion. Most of the monuments with inscriptions and pictorial representations of the most rudimentary arts of life belong to this period. The Persian rule endured about a century, and shortly after its subversion the Ptolemaïc dynasty was established. From that epoch up to our time the land of Egypt has remained under foreign rule; and we may all have sufficiently accurate information of the moral and physical condition of the Egyptians during the last fifteen centuries. The modern Egyptian has forgotten the science and the language of his forefathers who built the pyramids. The American empires have perished, and vast populations have been destroyed. It is not impossible that Europe and Asia should be depopulated and converted into forests, inhabited by small tribes of naked savages. The evidence of monuments inculcates the idea that nations have no infancy, manhood, old age, nor decrepitude, but that they flourish in ever-increasing strength so long as they do not deviate from the path of progress. A fruitful land deprived of rain becomes barren; it is divested of its green covering, and offers to the view bare rocks and arid sands. The seeds of many plants lie dormant in the dry soil; but when rain is restored, the seeds resuscitate and produce fruit. So the seeds of the arts of life may remain dormant, as it were, in the custody of the priesthoods of different nations, or in their built and written monuments. The most necessary books have been preserved by the priests with great success: they will be the interpreters of the voice of the monuments; and with their aid we may obtain the vast stores of useful knowledge latent in the monuments. Of the various inventions of man, the oldest extant, and the one which has subsisted in full vigour independently of the changes which have come over nations, is the Roda Niloscope. It was, and continues to remain, in the hands of the priesthood. They were great observers, and were informed of the discoveries of other men; and generalizing, from time to time, they furnished the imperishable materials for the construction of the sacred books. The reason why Niloscopic observations seem never to have been interrupted for so long a time is, that the Egyptian valley having been the produce of the art of man, its maintenance in the state which alone rendered it habitable required that it should be constantly manipulated according to the measured intensities of the operations of plutonic, volcanic, and other agencies, by unceasing observation and careful registering.

There is some evidence that the observatory was erected simultaneously with the construction of the canal of navigation from the Nile to Clysma, and that it occupied the point of the Delta formed by the Nile and the canal. The mouth of the canal and the port of the Reed must have been dug out of the rock; and the measure across from the point of the Reed to the western bank of the canal, where the present "Roman station" is situated, must have been about a quarter of a mile. The station called the Roman station must have been as old as the observatory, because it was complementary to it, and contained an instrument for the rectification of the Niloscopic instrument. For the main line of the river's current was artificially deflected more to the east by means of stone jetties protruding from the left bank of the Nile in a line beginning from a point above Memphis, and descending to the north as far as the latitude of Venus Aurea, where it formed an angle dedicated to Isis. From the lower point of the line of jetties the river's current crossed over to the right bank, and, sweeping along the artificial port of Reeds, flowed right against the observatory-point. As the river has a tendency to return to its original channel, a fact "proved by fish bruising the left sides of their heads when they descend the river, and the right sides when they ascend it," it is kept to its new line of direction by constantly keeping the jetties in repair. Those jetties exist, and are kept in repair, in our time. But when their greatest effect is produced, the thalweg is so completely turned to the east, between the parallels of Cafi-Tsi and the Roda (Reed) Point, that the scarcely visible current of water during the ebb-season, flowing limpid and smooth like oil, would convey a basket thrown into the port of the Reed across the mouth of the canal to the entrance of the subterranean passage which conveys the river into the Niloscopic chamber. Having to oppose the whole force of the current of the river, the masonry of the observatory, though founded on rock, would be liable to be carried away, or to be sufficiently disturbed by abrasion in its numerous horizontal planes of commissure as to cause the important *bench-mark* in the chamber, which has a fixed value, and from which the measurements are taken up and down circularly and continuously, to settle. The rectification of the observatory, or the determination of the measure of the settlement, was effected by comparing the lowest ebb-level of the Nile in the Niloscope with the lowest ebb-level in a rock well made in the eastern station where the level of the observatory bench-mark was reproduced in those epochs when the Niloscopic building underwent thorough repair or rehidrymatization. The present bench-mark in the observatory is the Western Mastaba: it was constructed by Suleyman in A.D. 714–715, and was made to graduate the epoch of the birth of Abram. The superior plane of the Mastaba had the value of 8422 noctas measured up from the zero-point of the Niloscopic accounts, and stood six cubits and nineteen dactyles above the secular ebb-level, and eight cubits and five dactyles below the secular flood-level, of the river in the chamber in the two thousand and thirty-seventh summer solstice of the Menophrean epoch. During the last eleven hundred and thirty-six Nile years, the settlement, an ever-increasing quantity, has amounted to about half a cubit in measure. The measure of it, ascertained by comparison of simultaneous hydraulic levels in private bench-marks (for the Roman station is no longer used for that purpose) situated some distance from the river, is kept added to the diurnal quotas of the hydraulic levels, but in a manner so as to keep it separate from the values of the hydraulic levels; so that when the building is repaired, the *historical* bench-mark will be raised the measure of the rectification, and, its account vanishing from the registers, fresh accounts of it will be kept. And the time will come when the present bench-mark will become useless, on the subsidence of the Mastaba below the ebb-level, as a former Mastaba has been, which, called the Mastaba of the Pharaohs, is now several feet below the ebb-level, as also a subterranean tunnel in cyclopean masonry which formerly admitted the river into the chamber, running immediately under the present tunnel for the same purpose. The indication of the method of preserving the records of the rectification requires that the scale of the Niloscope should be described. The scale is a combination of three accounts, (1) the chronological, (2) the geological, (3) the *mastabal.* These constitute the mural scale, because the measurements are always carried up and down the vertical escarps of the chamber. The quindecimal scale of the secular amplitude is divided into twenty-four equal parts, also called *cubits* in Niloscopic language. For the number twenty-four being expressive of maximum, and indicative of the highest water-level in the chamber, any quantity added to that number is the measure of the *retardation* in the mean velocity of subsidence. But as the river has to obtain two-thirds of its secular amplitude before the signal is given for the opening of the canals, that graduation is called the sixteenth cubit. The twenty-fourth- and the sixteenth-cubit graduations comprehend five standard Nile cubits. From the sixteenth to the twenty-second are reckoned six half cubits, and from the twenty-second to the twenty-fourth two entire cubits. Now the retardation has the property of making the sixteenth-cubit graduation fall on the mural scale, and rise when it diminishes by acceleration of subsidence, in order that, the canals being opened earlier in the season, the deposits of alluvial matter may be greater and enable the inhabited valley's level to meet the contingency of a rapid return of the geological motions to the settled season of subsidence, retardations being caused by temporary volcanic agencies having their seat in the constantly subsiding crust of the earth in obedience to, probably, astronomical causes. The retardation in A.D. 1851 and 1853 measured about 11·5 dactyles: it may have measured somewhat less in A.D. 1861; it is a variable quantity. On the other hand, the measure of the rectification is incorporated between the locus on the historical scale settled down to by the Mastaba and the historical value of the two-thirds graduation of the amplitude, irrespective of the retardation. The mural scale is therefore composed of three sections. The lowest section from the point zero up to the Mastaba remains constant, as does the uppermost section from the sixteenth cubit up to the twenty-fourth; but the central section augments with the subsidence of the crust of the earth and with the independent settlement of the Mastaba. In our cycle the observers divide the measure, from the Mastaba to the two-thirds of the secular amplitude, into seven equal parts, which are called the 'cubits of the Mastaba.' For an example, in illustration of the composition of the mural scale, the secular flood-level of A.D. 1854 may be taken as an instance. The flood of that year dated 1854+1322+4380 noctas of the historical scale; and had there been no retardation, the hydromasonic depth of the zero of the scale (or a mark conceived to have been left on the walls of the observatory by the maximum flood-level in the first Nile of the Annus Magnus which expired in B.C. 1322) would have gauged 7556 noctas, or 20 cubits, 17 dactyles, and 1 nocta; and the secular ebb-level of the Nile would have graduated 5 cubits, 17 dactyles, and 1 nocta of the historical scale; while the *sixteenth cubit* would have marked 15 cubits, 17 dactyles, and 1 nocta of the same scale. The historical value of the Mastaba being remembered, its superior plane would have measured 1854+2280−1800 noctas below the constant hydraulic level of the sixteenth cubit, increasing a nocta every year, owing to the subsidence, and further augmenting by an increment due to the settlement of the masonry of the building. The amount of existing retardation in that year being 172·5 noctas by measure, the zero-mark of the historical scale gauged 7556−172·5=7383·5 noctas; and the superior plane of the Mastaba, had it not suffered from settlement, 1854 +2280−172·5=3961·5 noctas below the secular maximum, and 3961·5 — 1800 = 2161·5 noctas below the sixteenth-cubit graduation. On the other hand, the settlement of the Mastaba, which in A.D. measured 280 noctas, would increase the measure of the Mastaba to the sixteenth cubit, on the ever-varying geochronological column, from 2161·5 to 2541·5 noctas. But the recession of the twenty-fourth cubit making the sixteenth recede* on the scale, for the regulation of the velocities of colmation of alluvial matter over the valley, the vertical measure from the Mastaba to the recession of the sixteenth cubit was 2541·5 — 172·5 = 2369 noctas, to that of the twenty-fourth 4169 noctas, and to the secular maximum flood-level 4341·5 noctas. Now it is evident that the locus of the historical zero would have measured below the Mastaba the date of the Mastaba in noctas diminished by the quantity of the settlement. The construction of the mural scale, though simple enough, has been a stumbling-block to all those who have desired to form some intelligible idea of it, so long as the objects of its use remained in oblivion. For the institution of Niloscopic observations had not chronology for its primitive object, nor merely to know when the river would be high enough to be let into canals, but the manipulation of the valley, the perturbations caused by volcanic phenomena making it necessary that the motions of the upper crust of the earth should be constantly watched in order to regulate the velocities of the deposits. Had the geological motion of subsidence not been liable to be interfered with by unforeseen local, temporary perturbations, of variable intensities and durations, the observations might not have been necessary. But as on account of those perturbations a connected series of observations became necessary, an accurate account of time was required to be kept, and with the account of time the series of dynasties and kings was noted, and land-marks were erected, which have since become to the ocean of time what lighthouses are to the navigation of seas.

At an unknown epoch, a short canal was opened from the western side of the great canal at its Nile entrance to the east of the observatory, and was led, in a straight line, in a

* Descend.

northern direction, to the Nile below the observatory. This canal insulated the section of the east bank of the river, the southern extremity of which, being occupied by the observatory, acquired the appellation of 'Roda' Island, the Arabic word 'roda,' signifying 'garden,' being a homophone of the Coptic word 'rot.' It would appear that the artificial channel was made with the view of keeping the port of the Reed clear of the river's deposits which accumulated under the east bank of the great canal entrance, and in the canal itself, through the neglected state of the lower works of the line of navigation which secured to the stream flowing through them a certain velocity necessary to prevent the settlement of matter held in suspension by it in its first entrance into the port of the Reed. The canal itself has perished, and nothing but an insignificant cunette remains to indicate its former course; and the port of the Reed has been entirely silted up, and has made room for the modern town of Cairo Vecchio, situated between the Roman station (called Cassr Shamâå) and the observatory. In our time, *at high Nile* the distance across from the edge of the river at Cairo Vecchio to the Roda Point measures 128 yards, with an average depth of 4·3 fathoms; in front of the river-walls revetting the southern point of Roda, and distant from the observatory-chamber about 10 yards, the river gauges about 11 fathoms, in consequence of the powerful eddy, and has a rocky bottom probably below the Mediterranean level; but the distance from the Roda Point across to the western edge of the river under Gizeh measures 1152 yards, and has a mean depth of 6·3 fathoms. The river in this latitude descends about 25·9 feet. The building is a quadrangular chamber, 81 feet in interior periphery, having its east and west sides measuring 20·83 feet each; it is composed of forty courses of regular and accurately worked masonry of compact calcareous sandstone, each course averaging 0·8032 of a foot in vertical scantling. A frieze in white marble, bearing a continuous Arabic inscription in Coufic characters, crowns the above-mentioned masonry, and adds 1·79 foot to the height of the walls. This frieze stood much above the highest flood-level when it was first put up.

It is, however, surmounted by six courses of masonry in soft limestone, which, with the course coping them, measure 6·5 feet in height. In A.D. 1847 the superior and horizontal plane of the coping-course stood 76·6 feet, nearly, above the autumnal ebb-level of the Red Sea at Clysma (Suez); in A.D. 1851 it measured 76·58 feet, and in A.D. 1861 about 76·53 feet, above the same sea-level. The surface of the pebbled walks of a garden, which is raised about 0·6 of a foot above the level of the planted areas of the soil, ranges 1·84 foot below the superior plane of the coping. That garden-level admitted the high Niles of A.D. 1851–3, and 1861, into the garden so as to cover the walks, the compression of the soil (which was brought up to form the garden about fourteen years ago) by settlement tending to increase the height of the water over it during extraordinary floods, independently of the geological subsidence, which would not appreciably exceed eight-tenths of an English inch of rise in fourteen years. The descent from the garden into the chamber is down a stepped ramp of solid masonry, of the same material and scantling as those of the walls, lining the interior escarp of the southern wall, and leads to a horizontal landing-platform which runs along the western escarp of the chamber, called the Western Mastaba. The superior plane of the Mastaba measures 24·168 feet below the superior plane of the coping. Of that measure about 0·093 of a foot is owing to wearing down of the surface of the platform, independently of the absolute settlement thereof in consequence of the degradation of the masonry supporting it. The plane of the Western Mastaba is identical in level with the floors of four alcoves with pointed arches left in the masonry of the walls, one in the middle of each side of the chamber, excepting the southern one, which is smaller than the others, and is left in the solid masonry of the southern ramp. The recess of the eastern alcove contains a passage into a tunnel in masonry, the sole of which is level with the surface of the Western Mastaba, and, proceeding due east the distance of 38 yards in a straight line, communicates with the river through an arched doorway in the river-walls revetting the island. This tunnel, which is in masonry, communicates with a lower one by means of a row of wells which connect its floor with the soffit of the lower one. The lower tunnel communicates from the chamber with the river; but it is now permanently silted up with *sandy* deposits, which still serve to keep the water-level in the chamber during the season of the ebb of the river in communication with the outer waters in the river. A third tunnel in solid masonry, which has the same section as the central one, terminates abruptly at the distance of about 10 yards from the river-wall, and communicates vertically with the central tunnel, over which it is placed, by two wells. The uppermost tunnel is destined to be continued due west, and to communicate directly with the chamber, and to become the central tunnel, in proper time. Another stepped ramp leads from the Western Mastaba along the escarp of the northern wall down to a lower landing-place, which is now permanently submerged. The blocks of solid masonry which line the four escarps of the walls of the chamber (from the lower course of which blocks the number of courses up to the marble frieze has been counted) leave a quadrangular basin 66·627 feet in perimeter. From the middle of this basin rises the slender shaft of a column in hard siliceous Egyptian marble: the shaft is octagonal, and it is in three sections, mounted over each other, and bound together with rings of different metals. The sections are divided into cubits, palms, and dactyles, alternately, in every way, by vertical grooves and horizontal lines, so that its divisions and subdivisions are made conspicuous and legible from a distance. It resembles the Indian cane. Its head is ornamented with flowers. One hundred and forty-four noctas below the horizontal plane of the head of the shaft there is a line of Coufic characters signifying in writing ‘ Sebââ-t-ashar-Drââ, or *seventeen cubits*. It had a capitol of the Corinthian order, in gilded marble: it has been removed. The foot of the column reposes on an elliptical block of hard pudding-stone, coloured red with oxide of iron. It reposes on Nile soil impregnated with fragments of pottery, and is entirely detached from the masonry of the building, which has only the effect of enclosing it. This stylobate has a periphery of 41·35 feet, and a thickness measuring exactly the twenty-fourth equal part of the Osirtasic ordinate. In A.D. 1854, the horizontal plane of the head of the shaft measured 9·15 feet below the superior plane of the coping, and 6·74 feet below the secular maximum flood-level. It is computed that, in 1139 Nile years which had elapsed since the building and the column were rehidrymatized by Suleyman, the column has settled 0·9868 of a foot, while the settlement of the building (including the wear of the Western Mastaba) during the same period amounted to 1·81574 foot. The column is never referred to in the diurnal measurements, because it relates only to former records. I shall conclude this description of the Roda Niloscope with a table of data concerning the scale, collected from various authors who have alluded to it in the last thirty-four centuries. By accurately recorded experience during five Sothis periods (that being the least time assignable to the accumulation of knowledge by those who have ministered in Nile observatories and temples) double crops are expected when the Abyssinian wave of drainage in its passage to the Mediterranean culminates in the parallel of Roda sixty days after the summer solstice, and reaches to two-thirds of the secular amplitude of the river in the same parallel. The most advantageous time for the culmination of the first wave is about the middle of August, and its best graduation is when it then obtains the cubit XVI. of the amplitude divided into XXIV. cubits or parts. But absolute famine may be expected if the hydraulic level, in the same epoch of the natural years, remains four cubits below the XVI. from insufficiency of water, and great scarcity if it should reach to the cubit XVIII. or the measure of a Nile cubit above the level XVI. in the same epoch, from too long a sojourn of water over the lands, and their not draining off in time for sowing. These phenomena are indications of what may be reasonably expected. But God in his mercy confounds the anticipations of men, that they may not cease to be watchful and industrious. Again, when the White Nile wave culminates in the latitude of Roda in the autumnal equinox and reaches to the cubit XXIV. (=cubit 15 of the quindecimal scale), and does not commence to assuage before the expiration of a fortnight after that epoch, the lands will be abundantly saturated, and the Nile will be esteemed a good Nile. But the most favourable Nile is that which is arrested two Nile cubits below the maximum, in the same epoch of the year, and keeps up to that level about a fortnight, because the numerous islands in the Nile, and those lands along the river's dykes which are not then covered with water, are able to bear abundant crops of grain, while their roots are in the vicinity of water, and their irrigation becomes easy. And this is the agricultural canon of the river. It will facilitate the perusal of the table of authorities with which this little memoir is to be terminated.

THE NILE CANON.

THE WHITE-NILE WAVE.

LEVEL IN THE AUTUMNAL EQUINOXES.

	Cubits.		Eng. feet.	
Secular maximum flood-level................	15	=XXIV.=	0·00000	Good Nile.
	14	=XXIII.=	1·72091	Better Nile.
Twice the Nephercherian number	13	= XXII.=	3·44182	Best Nile.
	12·5	=XXI. =	4·30227	Average Nile.
	12	=XX. =	5·16273	Insufficient.
	11·5	=XIX. =	6·02318	Bad Nile.
	11	=XVIII.=	6·88364	Worse Nile.
	10·5	=XVII. =	7·74409	Still worse Nile.

THE BLUE-NILE WAVE.

LEVEL IN THE MIDDLE OF AUGUST.

			Prognostications.
11	=XVIII.=	6·88364	Fear of great famine.
10·5	=XVII. =	7·74409	Fear of scarcity.
10	=XVI. =	8·60455	Prom. of 2 crops.
9	=	10·32546	Prom. of 1 crop.
8	=	12·04637	Fear of scarcity.
7	=	13·76728	Fear of famine.
6	=	15·48819	Publicsupplications to the most merciful God.

APPENDIX.

A TABLE of the principal Levels of the Nile in the Roda Observatory.

[Taken from the public Registers.]

[N.B. The Sheik of the Niloscope informed me, in 1852, that the Nile of the previous year rose 24 Cubits 11 Dactyles. He did not explain in a satisfactory way why he had quoted it 9 Dactyles. It is right that he should not divulge the secrets of the Niloscope before the proper time.]		Lowest Ebb of Nile.		The Nile Level in the Summer Solstice.		The level at the opening of the Cairo canal.		The Nile Level in the Salib or Autumnal Equinox.		Highest level reached by the river.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
L. Horner's researches in Memphis	A.D. 1854.*	6	16	6	17	15	19	23	18	23	23
	1853.*	6	3	6	6	18	11	24	1	24	9
	1852.	7	0	7	13	16	8	20	22	21	8
Heliopolis.	1851.*	6	1	6	4	17	15	23	20	24	9
	1850.	5	11	5	11	14	18	21	6	21	20
	1849.	5	11	5	11	16	4	23	12	24	5
	1848.	...		5	11	16	0	23	10	23	23
Operations of the International Commission to determine the relative levels of the two seas and the Nile.	1847.*	...		5	16	16	7	22	17	22	23
	1846.*	...		6	21	15	21	23	1	23	23
	1845.	...		6	5	16	8	20	6	20	15
Lepsius discovered the Semneh Instrument	1844.*	...		6	7	16	6	22	3	22	3
	1843.	...		7	5	16	0	22	6	22	6
	1842.	...		8	0	16	6	23	14	23	14
	1841.	...		5	14	16	4	23	18	24	0
	1840.	...		7	16	16	10	23	18	23	18
Abdel Medgid Khan ascended the throne, 1 July 1839.	1839.*	...		5	13	16	2	19	18	19	23

cient e.	A bad Nile.		This I prod fam	
Dact.	Cubs.	Dact.	Cubs.	
....	....	....	....	Valley and the Railway exposed to nd sudden disasters in the months ust, September, and October, from ite Niles, owing to the neglected f numerous dikes since A.D. 1854.
....	....	....	....	
....	....	....	....	
....	....	....	....	
....	....	....	....	
loigts est de	fait espérer une 0·54 mètre.		XVI.	s of the Mekïas made the Institute ie Nile rose 16 Cubits, and adapted iunts to that scale during the French n of Egypt.
....	XIX.	....	XVI.	
....	....	....	14. C	
....	....	....	....	
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....	....	....	....	
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....	....	....	....	e in B.C. 48.
....	12	18		
....	....	....	....	
....	....	....	....	